

APRIL 28, 2023

Matthew A. Beaton, Secretary
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: 339/349 Asset Condition Refurbishment Project
Single Environmental Impact Report, EEA #16647

Dear Secretary Beaton:

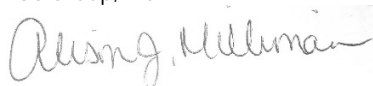
On behalf of the New England Power Company (NEP), BSC Group, Inc. is pleased to submit this Single Environmental Impact Report (SEIR) for various general maintenance and system improvements for 175 structures and approximately 17.25 circuit miles within existing electric transmission line rights-of-way ("ROW") extending through Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus (collectively referred to as the "Project"). The proposed Project includes required maintenance and system improvements to mitigate potential risks of electrical failure and to provide reliable delivery of electrical service.

This Single Environmental Impact Report ("SEIR") responds to the February 17th, 2023 Certificate of the Secretary of Energy and Environmental Affairs (the "Certificate") on the Expanded Environmental Notification Form for the 339/349 Asset Condition Refurbishment Project in Massachusetts ("EENF") (EEA No. 16647). This SEIR addresses the Scope outlined in the Certificate, responds to comments received, as required per the Massachusetts Environmental Policy Act ("MEPA") (M.G.L. c. 30 §§ 61-62I) and MEPA regulations (301 CMR 11.00), and was prepared in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations.

Please publish the Notice of Availability for this SEIR in the May 10th Environmental Monitor to initiate the 37-day public review and comment period. In accordance with the Secretary's Certificate and 301 CMR 11.16 of the MEPA regulations, the SEIR has been circulated to those who commented on the EENF, state and local agencies from which permits or approvals will be sought, as well as to the Public Libraries in Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus.

Please do not hesitate to contact me at (617) 896-4532 or AMilliman@bscgroup.com with any questions or comments.

Sincerely,
BSC Group, Inc.



Alison Milliman
Project Manager

cc: Andrew Cole, NEP
SEIR Circulation List (see Attachment D)

Single Environmental Impact Report

339/349 Asset Condition Refurbishment Project – Massachusetts

Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus.

April 27, 2023

Filed in Accordance with the Massachusetts Environmental Policy Act 301 CMR 11.00

Prepared for:



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APPENDICES

Attachment A:

Project Figures and Plans

- Figure 1 USGS Site Location Map
- Figure 2 SEIR Plans
- Figure 3 Structure Details

Attachment B:

EENF Secretary's Certificate and Comment Letters (Annotated)

- DEP - Massachusetts Department of Environmental Protection - Waterways
- Massachusetts Department of Conservation and Recreation
- NERO - Massachusetts Department of Environmental Protection - Northeast Regional Office
- Massachusetts Department of Transportation
- NMCOG - Northern Middlesex Council of Governments
- Massachusetts Historical Commission

Attachment C:

Best Management Practices (BMPs)

- National Grid's Environmental Guidance for ROW Access, Maintenance and Construction Best Management Practices (EG 303)
- Release Notification in Massachusetts (EG-501MA)
- Spill Response Procedures and Notification (EG-502MA)
- Excess Soil Management from Construction Projects on Rights-of-Way (EG-1707).

Attachment D:

SEIR Circulation List

1 OVERVIEW, PROJECT DESCRIPTION & SUMMARY

1.1 INTRODUCTION

This Single Environmental Impact Report (“SEIR”) responds to the February 17, 2023 Certificate of the Secretary of Energy and Environmental Affairs (the “Certificate”) on the Expanded Environmental Notification Form for the 339/349 Asset Condition Refurbishment Project in Massachusetts (“EENF”) (EEA No. 16647). This SEIR addresses the Scope outlined in the Certificate, responds to comments received, as required per the Massachusetts Environmental Policy Act (“MEPA”) (M.G.L. c. 30 §§ 61-62I) and MEPA regulations (301 CMR 11.00), and was prepared in accordance with the general guidelines for outline and content found in Section 11.07 of the MEPA regulations.

The activities discussed in the SEIR include general maintenance and system improvements for 175 structures and approximately 17.25 circuit miles within existing electric transmission line rights-of-way (“ROW”) extending through Tewksbury, Andover, Wilmington, North Reading, Lynnfield, Wakefield, and Saugus (collectively referred to as the “Project”).

This SEIR is organized as follows:

- Section 1 Overview, Project Description & Summary
- Section 2 Responses to Comments¹
- Section 3 Land Alteration, Other Permanent Impacts, Stormwater, and Hazardous Waste
- Section 4 Wetlands, Waterways, and Water Resources
- Section 5 Rare Species
- Section 6 Historic and Archaeological Resources
- Section 7 Climate Change Adaptation and Resiliency
- Section 8 Construction
- Section 9 Mitigation and Section 61 Findings
- Section 10 Regulatory Compliance

The information presented in the EENF is incorporated herein by reference. A glossary of acronyms and technical terms is located at the end of this document. *Appendices A through E* include relevant supplemental information, e.g., figures and plans, the annotated response to comment letters, and the SEIR circulation list.

¹ Section 2 includes a reference table of all comments received on the EENF, with responses and further references to the applicable information in the SEIR.

1.2 PROJECT NAME & PROPONENT

Project Name: 339/349 Asset Condition Refurbishment Project – Massachusetts (“339/349 ACR Project” or the “Project”)

EEA Number: # 16647

Project Proponent: New England Power Company (“NEP” or the “Proponent”)

1.3 PROJECT LOCATION

Within Massachusetts (“MA”), the Project will be located within approximately 17.25 miles of existing electric transmission line ROW for the 345-kilovolt (“kV”) 339/349 transmission line (“339/349 Line”), extending from Tewksbury through Andover, Wilmington, North Reading, Lynnfield, Wakefield, and Saugus, MA (Figure 1-1). The Project proceeds from the Tewksbury #22A Substation in Tewksbury (northwest terminus of the Project), to the Golden Hills Substation in Saugus (southeast terminus). Please refer to **Attachment A: Project Figures and Plans**, which includes *Figure 1 USGS Site Location Map*, *Figure 2 MEPA General Purpose Plans*, and *Figure 3 Structure Details*.

1.4 SUMMARY AND PROJECT DESCRIPTION

The Project involves complete refurbishment of the 339/349 Line, with activities proposed at 175 Structures along the line. Specifically, activities will include:

- Work envelope and access road improvements (at select locations, including both within and off-ROW access):
 - Grading.
 - Road widening to a 16-ft standard width.
 - The addition of fresh stone to access roads and work envelopes.
- Vegetation management, including:
 - Mowing of work areas and work envelopes within the ROW.
 - Mowing along access road edges (both within ROW and off-ROW).
 - Selective tree removal along the edge of ROW.
 - Selective tree removal along the edge of off-ROW access roads.
 - More extensive tree removal for line realignment between Structures 91 – 98 in North Reading, Reading and Lynnfield.
- Structure activities, including:
 - Overhead maintenance (replacing equipment and installing new OPGW).
 - Direct embed structure replacements.
 - Caisson foundation structure replacements.
 - Structure removals.

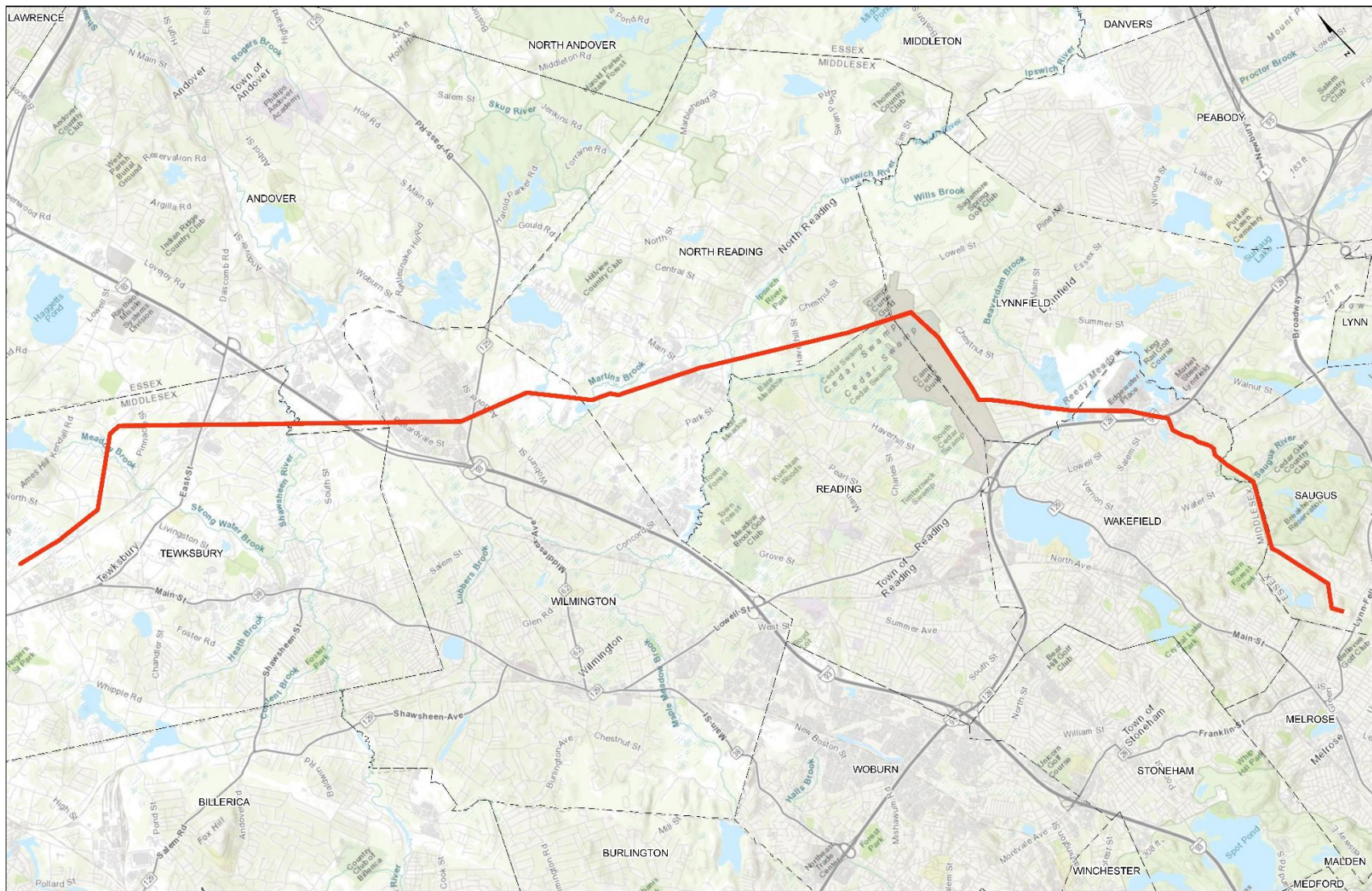


Figure 1-1: Overview of the 339/349 ACR Project Route

1.5 ALTERNATIVES

The Alternatives Analysis presented in *Section 2* of the EENF considered the following alternatives for the Project:

- No-Build Alternative;
- Targeted Asset Repair / Maintenance only;
- Structure Design Alternatives; and
- No Realignment of the 339/349 Line within the ROW between Structures 91 – 98.

Alternative easements for the Project were not identified because the Project does not require new ROW or new construction. No additional permanent or temporary easements will be required to create access to the ROW.

NEP rejected the No Build Alternative because it would not address asset reliability and repair requirements. The Targeted Asset Repair / Maintenance Only alternative was rejected because it would not significantly reduce environmental impacts (access road improvements and tree removals would still be required along much of the line) and would likely result in repeated disturbance in the future (as structures not repaired/replaced during this Project age). Alternative structure designs were also considered for the Project, with the view to minimizing environmental impacts while operating within line clearance and outage limitations. The selected structure design (hybrid steel H-frame structures), provided the best compromise between reducing environmental impacts (reduce work envelope and foundation size requirements), while providing safe line clearances and a more practical installation method (H-frame structures can be installed and maintained without the need for line outages).

Finally, NEP considered leaving the section of line between Structures 91 – 98 in the current alignment, in an effort to reduce environmental impacts and tree removals. However, maintaining the line in its current location was deemed infeasible, as achieving safe line clearances would require extensive tree removal to the northeast (NE) of the line (where a large number of very tall white pine trees have grown), in an area where NEP does not have easement rights. Obtaining a new easement would trigger Article 97, resulting in substantial project costs and delays, which would put the deteriorated electrical infrastructure at increased risk of failure. In order to perform the entire ACR Project on schedule, and within the limits of existing easements, NEP proposes to relocate the line to the southwest (SW), requiring tree removals within a fragmented strip of forest in between two existing ROWs. Although wetlands are present within this area, compensatory mitigation will be provided for wetland loss (see *Section 9.3* of the SEIR), and surveys of isolated wetlands were conducted on April 27, 2023, to establish whether any of the associated isolated wetlands have vernal pool activities.

Table 1-1 (following page) provides a conceptual overview of the environmental impacts associated with each alternative. Based on a detailed alternatives analysis, NEP determined that the Project (complete asset condition refurbishment with steel hybrid H-frame installations), would best address the need, with the least impact to the natural and human environment. As requested in the Certificate, consideration of an “alternative easement” has been addressed above, and no further analysis of this option has been included in the SEIR.

Table 1-1: Overview of Environmental Impacts associated with each Project Alternative

Alternative	Land Alteration	Wetland Impacts	Potential Vernal Pool Impacts	Rare Species Habitat Impacts	Archaeological Impacts
No-Build	None immediately, but potential for repeated disturbance in future.	None immediately, but potential for repeated disturbance in future.	None immediately, but potential for repeated disturbance in future.	None immediately, but potential for repeated disturbance in future.	None immediately, but potential for repeated disturbance in future.
While the No-Build Alternative would have no immediate environmental impacts, it would not meet Project goals of improving electrical system reliability and resilience. The existing aged and deteriorated infrastructure would have an increasingly high risk of failure with time, leading to a higher likelihood of emergency activities being required. This would likely lead to repeated disturbance of resource areas, with less time for design and permitting review to minimize impacts (due to the emergency nature of the works).					
Targeted Asset Repair	Similar to the preferred alternative.	Similar to the preferred alternative (for immediate work), with additional impacts due to repeated disturbance for future work.	Potentially reduced impacts than the preferred alternative (for immediate work), but additional and repeated impacts may be necessary for future work.	Similar to the preferred alternative.	Similar to the preferred alternative.
For most resource areas, the Targeted Asset Repair Alternative would result in similar levels of disturbance to the Preferred Alternative, as higher impact activities (tree removals and access road improvements), would still be required along all/most of the line. Tree removals would still be required along the ROW edge (as safe line clearances still need to be restored) and skipping structure work at some of the less critical structures during this round of maintenance would not reduce the need for access roads past those structures, to reach the more critical ones. This alternative would also result in the need for repeated disturbance of wetlands and potential vernal pools, which would require matting each time a new structure became critical and access matting had to be re-installed.					
Structure Design Alternatives: Steel Monopoles	Reduced need for tree removals along ROW edge, compared to preferred alternative.	Increased fill in wetlands compared to preferred alternative (larger foundations).	Similar to the preferred alternative – no permanent fill is proposed in VPs, but matting for access/work envelopes would still be required.	Similar / slightly greater impacts than the preferred alternative, as monopoles require larger work envelopes to install. Any reduction in impacts from tree removal would likely be off-set by the increase in impacts from work envelopes.	Slightly greater impacts than the preferred alternative, as monopoles require larger work envelopes to install (archaeological resources are more likely to be negatively impacted by grading and work pad establishment than selective tree removals).
Structure Design Alternatives: Standard H-frame	Increased need for tree removals along ROW edge, compared to the preferred alternative.	Increased alteration of wetlands due to larger structure footprint (although	Similar to the preferred alternative – no permanent fill is proposed in VPs, but matting for access/work	Similar / slightly greater impacts than the preferred alternative, as the wider	Similar / slightly greater impacts than the preferred alternative, as the wider

Alternative	Land Alteration	Wetland Impacts	Potential Vernal Pool Impacts	Rare Species Habitat Impacts	Archaeological Impacts
	Standard structures are approx. 15% wider than the preferred hybrid structures, and as such a greater clearance width would be required.	actual fill from foundations would be roughly equivalent)	envelopes would still be required.	structures would have a slightly larger footprint.	structures would have a slightly larger footprint.
For most resource areas, the Structure Design Alternatives would result in similar / slightly increased levels of disturbance, compared to the Preferred Alternative. A potential reduction in tree removals (from using steel monopoles) would be off-set by increases in wetland and rare species impacts (due to larger foundations and work envelopes). This structure design also has considerable logistical limitations, as installation and future repair work would require line outages (whereas the preferred steel hybrid or standard H-frame structures can be worked on live-line).					
No Realignment Alternative	Similar to the preferred alternative – tree removals would still be required to provide adequate line clearances.	Reduced impacts.	Potentially reduced impacts – isolated wetlands within the realignment area may support vernal pool activity (survey to be conducted Spring 2023).	Similar to the preferred alternative. Tree removals would still be required within NHESP designated habitat to the northeast (NE) of the ROW.	Similar to the preferred alternative.
While the No Realignment Alternative between Structures 91 – 98 would reduce environmental impacts (particularly to wetland resource areas), this alternative would still require tree removals to the NE of the line, to provide safe line clearances. This area is outside of NEPs easement, and as such would require the acquisition of a new easement (triggering Art.97), resulting in lengthy Project delays and costs. As such, this option was deemed infeasible by NEP. Tree removals to the north of the line would also result in new impacts within an otherwise largely intact forest area, in contrast to the preferred alternative, which would focus tree removals within a narrow fragment of forest in between existing ROWs.					
Preferred Alternative	~2.33 acres (tree removals within ROW, and a further 41 individual trees removed for off-ROW access.	~16.6 acres temporary (construction matting), and ~2.38 acres permanent (alteration due to structure fill and tree removals).	~10,000-sf temporary impacts (matting for access).	~6 acres temporary (construction matting & standard transmission line vegetation management activities), and ~2.8 acres permanent (alteration due to structure fill, permanent work envelopes and access roads, and tree removals).	See <i>Section 6.3</i> for details of archaeological surveys, and measures to avoid and minimize potential impacts.
Quantitative impacts associated with the Preferred Project Alternative are described in more detail in <i>Section 1.10</i> of the SEIR. Overall, the preferred alternative provided the best compromise between achieving project goals, addressing logistical concerns (line outages and scope for future maintenance), and minimizing environmental impacts.					

1.6 MEPA HISTORY & SCOPE OF SEIR

The Project is undergoing MEPA review because it requires one or more state permits and exceeds MEPA thresholds identified in Table 1-2.²

Table 1-2: MEPA Thresholds

<u>MEPA EIR Threshold</u>	
11.03(3)(a)(1)(a)	EIR: Wetlands, Waterways and Tidelands: alteration of one or more acres of bordering vegetated wetlands (BVW).
<u>MEPA ENF Thresholds</u>	
11.03(3)(b)(1)(f)	Wetlands, Waterways and Tidelands: alteration of one half or more acres of other wetlands.
11.03(3)(b)(1)(d)	Wetlands, Waterways and Tidelands: alteration of 5,000 or more sf of bordering or isolated wetlands.
11.03(2)(b)(2)	Rare Species: taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities.
11.03(11)(b)	Areas of Critical Environmental Concern: any Project within a designated ACEC, unless the Project consists solely of one single family dwelling.

NEP submitted the EENF to MEPA on January 3rd, 2023 and it was publicly noticed in the January 11th Environmental Monitor. The EENF included a request that NEP be allowed to file an SEIR in accordance with 301 CMR 11.06(8). The EENF received an extended public comment period pursuant to Section 11.06(1) of the MEPA regulations.

The Secretary's Certificate, issued on February 17th, 2023, required the preparation of an EIR and allowed the Proponent to prepare an SEIR. This submittal addresses the Scope outlined in the EENF Certificate and the requirements of 301 CMR 11.07.

In accordance with the Secretary's Certificate and 301 CMR 11.16 of the MEPA regulations, the SEIR will be circulated to those who commented on the EENF, state and local agencies from which permits or approvals will be sought, and the public libraries in Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus. Please refer to the SEIR Circulation List presented in **Attachment D**.

² The Massachusetts Historical Commission is reviewing the Project and has not issued a Determination of Effect, as described in *Chapter 6*.

1.7 PROJECT NEED AND BENEFIT

1.7.1 Project Benefits

The Project will improve the electric transmission system infrastructure and comply with comprehensive regional plans for New England asset management and reliability improvements in New England. Benefits of the Project include the following:

- Increased resiliency of the overall transmission line. By installing improved foundations and more robust structures, as well as relocating portions of the ROW to increase the distance between the lines and the edge of the ROW, this infrastructure will be better suited to withstand strong winds and storm events.
- Improved communication between substations, as a result of the installation of OPGW. This will allow NEP to respond more rapidly to outages along the line, providing improved electrical service and protecting public safety.
- Reduce overall disturbance to adjacent landowners, wetland resource areas, and rare species habitat over time, by planning for the future and reducing the likelihood of repeat projects. This will both reduce environmental impacts and reduce costs to NEP's customers.

1.7.2 Project Need

The Project is needed to address existing asset conditions along the 339/349 Line that pose a threat to electrical reliability. Existing transmission structures have surpassed their life expectancy and based on aerial photography and visual and desktop inspections of the existing overhead line assets, deteriorated wood poles have been identified (woodpecker damage, thin/rotting pole tops, deterioration of crossarms, pole cracking, wood spar arms, damaged guy wires, etc.). The Project will result in a more reliable, climate-ready, and resilient transmission system, that can withstand more extreme weather events.

The refurbishment of the 339/349 Line will ensure reliable and continuous electricity is provided to customers serviced by these lines and will also equip the lines to provide improved electrical service into the future. Due to the age of the 339/349 Line, many of the existing structures have reached the end of their useful lives, and NEP is proposing to replace many of them. As part of the Project, NEP also plans to replace all existing overhead shield wires on the 339/349 Line with Optical Primary Ground Wire (OPGW), which serves a dual purpose by providing electrical grounding in the event of lightning strikes, with the additional feature of enabling telecommunication along the transmission lines and between substations. This telecommunication is critical to identifying problems (such as damage to the infrastructure from storm events or storm related outages), enabling NEP to respond quickly to any problems with the transmission of electricity along the line.

In order to perform the refurbishment work, access improvements or re-establishment and construction of new access roads will be undertaken, due to poor access along most of the 339/349 ROW corridor. These improvements are necessary to undertake the current Project in a safe manner, and for providing

safe and stable travel surfaces for specialist utility equipment during future maintenance and/or emergency repair work.

1.8 SUMMARY PROJECT DESCRIPTION & SCHEDULE

1.8.1 Project Description

The Project description is largely unchanged from the EENF. Activities include various general maintenance and system improvements for 175 structures along approximately 17.25 miles of active ROW. No new construction is proposed for this Project.

As noted in *Section 1.6*, comprehensive inspections of the Project area have identified deteriorated wood pole assets, deterioration of cross-arms and guy wires, and lack of safe access for maintenance and emergency needs. The following activities are proposed to address the Project need and to extend asset life:

339 Line:

- Replace 75 wood pole H-Frame suspension structures with new engineered steel direct embed H-Frame suspension structures.
- Replace 11 wood pole foundation structures with new engineered steel H-frame suspension structures set on concrete foundations.
- Replace eight wood pole H-frame suspension structures with new engineered steel H-frame deadend structures set on concrete caisson foundations.
- Remove three wood pole H-frame pile foundation suspension structures in wetlands.
- Replace steel H-frame suspension Structure 31 with new engineered steel H-frame deadend structure set on concrete caisson foundations.
- Replace steel H-frame deadend Structure 98 with new engineered H-frame deadend structure set on concrete caisson foundations.
- Replace three wood three pole suspension pulloff structures set on concrete caisson foundations.
- Replace one wood three pole suspension pulloff Structure 118 with a new engineered steel H-frame suspension structure set on concrete caisson foundations.

349 Line:

- Replace steel single pole davit arm deadend Structure 139 with new steel single pole davit arm deadend set on a concrete caisson foundation.
- Replace eight existing wood pole H-frame structures with a new engineered steel H-frame direct embed suspension structures.

- Replace one existing wood three pole suspension Structure 146 with a new engineered steel H-frame suspension structure set on concrete caisson foundations.

339 and 349 Lines:

- Maintain/repair/install signage and grounding.
- Grading and re-establishment of work envelopes (in select locations), to provide adequate work space for Project activities and future maintenance.
- Reestablish pre-existing access roads (Type R and S road improvements), and construct new access roads (Type 1 – 5 improvements), as necessary, to safely access structures.
- Replace existing shield wire with OPGW to provide high speed communications between substations.
- Install ADSS cable inside an underground conduit from the splice box on Structure 131 to the manhole outside East Tewksbury Substation.

Please refer to *Sections 3 through 9* of the SEIR for further details of project activities and associated impacts, both within-ROW and off-ROW.

1.8.2 Project Schedule

NEP intends to commence work on the 339/349 Line in the Summer of 2025 (provided all applicable permits have been obtained). Project activities will generally proceed in the following order:

- Vegetation management;
- Install sediment & erosion controls (where applicable);
- Access road reestablishment/improvement and establishment;
- Matting installation;
- Foundation installation (for caisson supported structures);
- Perform maintenance at existing structures (to be retained);
- Install new structures/structure replacements;
- Remove old structures;
- Install new OPGW along the entire line;
- Restore the ROW (grading, mulching, seeding etc.); and
- Once ROW is fully stabilized, remove sediment and erosion controls.

1.9 SUMMARY OF EXISTING CONDITIONS

The total land area of the Project ROW is approximately 653.62 acres. The existing ROW is currently used for electric utility operations for multiple overhead electric transmission lines and, as such, contains an extensive network of existing utility structures. Existing unpaved access roads extend throughout the ROW, along with some off-ROW access routes. The entire width of the ROW is

generally maintained to low-growth vegetation. NEP holds easement rights rather than land ownership over most of the ROW.

As noted in the EENF (*Section 3 - Land Use*), predominate land uses within a 300-foot buffer to the ROW are industrial (48%), exempt (government and non-profit, 28%), and residential (20%). The 339/349 Line ROW transects one (1) area of DCR owned land – the Breakheart Reservation in Wakefield and Saugus. The ROW also transects thirteen (13) additional open space and recreation resources, listed in *Table 1-3*. Details of NEP's easement rights on DCR land were provided to DCR on 11/17/2022, and are recorded in the Middlesex registry of deeds (July 31, 1936), Book 6046, Page 118.

Table 1-3: Public Open Space & Recreational Resources / Article 97 Lands

Open Space & Recreation Resources		
Town	Site Name	Owner
Tewksbury	Point Lewis Land	Town of Tewksbury
Tewksbury	Indian Ridge Conservation Area	Town of Tewksbury
Tewksbury	Tewksbury State Hospital	Commonwealth of Massachusetts
Tewksbury	Bradford Road Conservation Area	Town of Tewksbury
Andover	South Street Conservation Area	Andover Village Improvement Society
Wilmington	Wellfield	Town of Wilmington
Wilmington	Pumping Station	Town of Wilmington
North Reading	Cedar Swamp Conservation Area	Town of North Reading
North Reading	Martins Brook Conservation Area	Town of North Reading
North Reading	Chestnut Street Conservation Area	Town of North Reading
Reading	Cedar Swamp	Town of Reading
Lynnfield	Partridge Lane Conservation Area	Town of Lynnfield
Wakefield	Montrose Avenue CR	New England Power Company
Wakefield	Reedy Meadow Conservation Area	Town of Wakefield
Wakefield	Breakheart Reservation	DCR - Division of State Parks and Recreation
Wakefield	Reedy Meadow	Town of Wakefield
Saugus	Breakheart Reservation	DCR - Division of State Parks and Recreation

Wetlands, Waterways and Water Resources are discussed in detail in *Section 4* and depicted in **Attachment A: Figures and Plans**. Wetlands identified within the Project area include the following:

- 143 biological wetlands (including BVW, IVW and CVP).
- 17 perennial streams, and 26 intermittent streams and associated Inland Bank (“Bank”).
- Riverfront Area (“RA”) associated with perennial streams.
- Bordering Land Subject to Flooding (“BLSF”).

In terms of waterways, all the watercourses that the Project crosses are already spanned by NEP’s existing overhead transmission lines, and all 17 perennial streams are presumed to be “normally navigable” by canoe, kayak, raft, or rowboat, for the purposes of Chapter 91 jurisdiction. None of the

rivers crossed by the Project are designated as a National Wild and Scenic River pursuant to the National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287).

The Project route contains twelve (12) state-listed wildlife species: one (1) mammal, four (4) birds, one (1) amphibian, and six (6) invertebrates. Rare species habitat is located within mapped polygons located along portions of the Project route. Refer to *Section 5: Rare Species* for further details.

Cultural resources in the Project area have been identified and evaluated, as described in the EENF (Section 6). For more information, please refer to *Section 6: Historic Resources*, for updated information.

The ROW crosses several state roadways that are managed by the Massachusetts Department of Transportation (“MassDOT”). NEP anticipates requiring access from state highways along the ROW at three (3) existing access points. The Project’s impacts relative to MassDOT are associated with the installation of new overhead wires across state highways by a non-municipal utility. Please refer to *Section 10.3.4* for additional information.

Two (2) Activity Use Limitation (AUL) sites with Release Tracking Numbers (“RTNs”) were identified near the Project route, which indicates there has been a release to the environment of oil and/or hazardous material that is regulated under the Massachusetts Contingency Plan (310 CMR 40.0000). Both AUL’s were identified within the Golden Hills Substation in Saugus, MA (RTN 3-0028298 & 3-0024786). RTN 3-0028298 was associated with an oil release, and notification was given on 01/30/2009. The AUL’s Compliance status is RAO, and the compliance date was 01/29/2013. RTN 3-0024786 was notified on 04/19/2005. The AUL’s Compliance status is RAO, and the compliance date was 04/18/2008. No work is proposed within the limits of the AUL, nor will there be subsurface work within the Substation.

1.10 SUMMARY OF PROPOSED CONDITIONS

Proposed conditions are consistent with the existing use of the Project area as an active utility ROW. Project activities involve structure replacements or maintenance and access road improvements along the 345-kV overhead transmission lines, specifically replacing wood pole “H” frame tangent structures and triple-pole (dead-end and angle structures) with steel structures. Please refer to *Section 1.7* for a list of Project-related activities. Please refer to *Section 3* for a discussion of land alteration and stormwater management.

In locations where the ROW route bends, it is generally necessary to install structures with reinforced concrete caisson foundations to support the additional load. Generally, the replacement structure heights will be close to the heights of existing structures, but certain structures could be taller to maintain safety clearances over fluctuating terrain and highway crossings, or to span wetland resource areas.

The overhead structures currently support conductors in a horizontal configuration along with two shield wires at the top of the structure. Existing shield wire will be replaced with OPGW to support high-speed

relay and system communication requirements. The OPGW will combine the functions of grounding (the current function of the shield wire), and communications.

Vegetation on the existing ROW will continue to be maintained to prevent the growth of tall woody species that could interfere with reliable operation of the transmission line. This is critical to retain reliability and provide unrestricted access to the ROW and structures for construction, maintenance, and operation of the lines. During construction, general vegetation management practices typically include mowing and hand-cutting, tree pruning and removal, and wood disposal and management. Subsequent maintenance of vegetation along the line will be consistent with NEP's Five-Year Vegetation Management Plan (VMP), which follows mandates set by federal and state regulations for the purposes of ensuring safe, reliable delivery of electric services.

Vegetation management methods associated with the 339/349 ACR Project are discussed further in *Section 3.2* and will include the removal of 2.33 acres of trees for line realignment between Structures 91 – 98, and the removal of 41 individual trees along the off-ROW access road from Haverhill St in North Reading³. Additional tree trimming and removal of hazard trees will also be required at multiple locations along the ROW edge, to reestablish safe line clearances. The extent to which removal of hazard trees is required is not known at this time.

Access to the Project construction areas will be achieved via existing access roads where available, some of which will be reestablished or improved to accommodate construction vehicles, as well as sections of new access road construction along the ROW. Most of the access roads are within the ROW, but some are off-ROW and will be used per NEP's agreements with individual property owners. All access routes are depicted on the SEIR Plans in **Attachment A**. Access roads generally have a 16-foot-wide travel surface. In general, the footprints of access routes are conservatively calculated to have a 20-foot-wide base to allow for road building to shift within its footprint or for shoulder slopes, as necessary. Access roads within NHESP habitat will have a 16-foot-wide base. \

1.11 CHANGES IN THE PROJECT SINCE THE EENF

Planning and design of a utility project is a dynamic process involving a balance of environmental, regulatory, and engineering considerations. The Project's parameters are unchanged since the EENF filing, but coordination with the various State agencies has advanced since submission of the EENF, and Project impacts have been refined/re-calculated to better describe on and off-ROW areas. These modifications and updates do not significantly alter the conclusions of the EENF. Please refer to *Table 1-4* for a general overview of Project changes for all applicable parameters.

While it has not been possible to further reduce the impacts of the Project, more detailed justification of the Project needs and limitations is provided throughout the SEIR. In particular, please refer to

³ Crown area was not estimated for the 41 off-ROW tree removals, as the dense forest canopy combined with the infrequency of the tree removals made this difficult to estimate accurately.

Section 3 (tree removals and line realignment), *Section 4* (wetland impacts), and *Section 5* (rare species impacts), for further details.

1.11.1 Potential Changes in Project Schedule and Sequencing

As noted above in *Section 1.8.2*, NEP intends to perform the work on the 339/349 Line in the Summer of 2025. However, NEP's ability to work on the lines is ultimately driven by the availability of transmission line outages. These are determined by the regional system operator ISO-NE, and are outside of the NEP's control. Certain activities cannot be completed while lines are live due to safety constraints and conductor to equipment clearances. Other factors which may influence project schedule or sequence may include the order in which local permits are received, and TOY restrictions on work within areas of Rare Species Habitat (see *Section 5*). As such, it is not possible at this stage in the permitting process to provide an accurate schedule for the works along the 339/349 Line.

Table 1-4: Summary of Project Changes since EENF

Activity	Type of Change	Description of Change	Change in Impact
Tree Removals	Refined tree removal calculations	Since submission of the EENF, tree removal calculations have been refined to provide a clearer break-down of tree removals within each resource area, as well as a break-down of within-ROW and off-ROW tree removals. Please refer to Table 3-1 of the SEIR for this information.	No change in impact, but more accurate break-down of tree removals by resource area and location.
	Identification and flagging of all off-ROW tree removals	Since submission of the EENF, trees scheduled for removal along off-ROW access roads have been flagged in the field, and their positions marked by GPS. In total, 41 trees require removal off-ROW to allow access.	No change in impact, but more accurate assessment of off-ROW (when the EENF was submitted, only estimates for within-ROW tree removals had been calculated).
BLSF	Impacts to BLSF	It was incorrectly stated in the EENF that all structure installations within BLSF would be above BFE. However, although five (5) structure replacements in BLSF will be below BFE, they will not result in a significant alteration from existing conditions. Of the five (5) structure replacements proposed within BLSF, four (4) will be direct embed structures with <i>de minimis</i> impacts on flood storage capacity. One (1) structure replacement (Str 139), is currently supported by a concrete caisson foundation, which will be replaced with a new foundation of approximately the same size. As such, even this larger structure will not result in a significant alteration of BLSF, compared to existing conditions.	None.
Wetland / PVP delineations	Assessment of the PVP the Secretary identified in the site walk.	NEP reviewed the isolated wetlands located between Structures 91 and 98 to identify any areas that are exhibiting vernal pool activity in the Spring of 2023.	None.
Advancement in correspondence with state agencies	Advanced coordination with NHESP	Since submission of the EENF, NEP has received an initial determination from NHESP (on 02/15/23 - NHESP file# 22-41435). At this stage, it is anticipated that a “Take” of rare species or their habitats can be avoided through implementation of specific mitigation measures, provided by NHESP with the determination.	No change in impacts. Consultation is ongoing to ensure that appropriate avoidance, mitigation, and time-of-year (TOY) restrictions, are employed.
	Advanced coordination with MHC	Since the EENF was filed, the MHC commented on the intensive archaeological survey report, concurring with PAL’s recommendations. PAL also performed a historic architectural reconnaissance survey and effects assessment in January 2023, and a technical report will be submitted to the MHC, USACE, and Massachusetts DCR for review and comment.	No change in impact. NEP is preparing an archaeological site avoidance and protection plan to avoid impacts to significant archaeological resources that are identified within the Project impact areas.

1.12 SUMMARY OF PROJECT IMPACTS

The Project design achieves the overall need while avoiding and minimizing impacts wherever possible by using an existing transmission ROW to the greatest extent practicable. No additional ROW area or land is needed. Construction and operation of the Project will avoid sensitive environmental resources wherever possible. Where impacts are unavoidable, they will be minimized to the extent practicable, based on extensive field reviews and careful attention to design, particularly for wetlands, vernal pools, and wildlife habitat. Please refer to *Section 4* of the SEIR for further details of wetland impacts, *Section 5* for rare species, and *Section 6* for cultural and archaeological impacts.

In total, the project proposes approx. 2.33 acres of land alteration, associated with tree removals for line realignment between Structures 91 – 98. In addition, 41 individual trees will be removed to provide access along the off-ROW access road from Lowell Street in Lynnfield. These areas will subsequently be maintained as low-growing scrub/shrub or herbaceous communities, in accordance with the VMP.

Most impacts to wetland resource areas will be temporary and associated with the use of construction mats (16.6 acres). Permanent impacts to wetlands are associated with fill for replacement structure foundations (~20,358-sf / 0.47 acres). Wetland conversion within ROW for line realignment (2.33 acres). The location of temporary and permanent activities within wetland resource areas are shown on the MEPA plans provided in **Attachment A** and are described in more detail in *Section 4* of the SEIR.

According to NHESP, the 339/349 Line ROW transects Priority/Estimated Habitat for twelve (12) state-listed wildlife species, consisting of one (1) mammal, four (4) birds, one (1) amphibian, and six (6) invertebrates. Where intersected by the ROW, these Priority/Estimated habitats are regularly maintained per the NHESP-approved Operation and Maintenance Plan (“OMP”). Please refer to *Section 5* of the SEIR for further details. The initial response received from NHESP on February 15, 2023, to the Project Review Checklist (NHESP File # 22-41435), indicates that the Project is anticipated to avoid a “Take” of rare species, provided that the conditions described in *Section 5* are met.

MassDOT jurisdictional roadways may experience temporary impacts during construction, but all work will occur in accordance with MassDOT-approved Traffic Management Plans (“TMP”) and no permanent impacts are anticipated (see *Section 10.3.4*). NEP will also coordinate with municipalities where local roadway crossings are required to ensure potential impacts are mitigated, as appropriate.

In terms of cultural resources, discussions are ongoing with the Massachusetts Historical Commission (“MHC”), the United States Army Corps of Engineers New England District (“USACE”) regarding this matter. Tribal representatives are also involved in the identification and assessment of cultural resources. Please refer to *Section 6* for more information.

1.13 SUMMARY OF PROJECT MITIGATION MEASURES

NEP's extensive mitigation measures fall into three primary categories: avoidance/minimization, construction best management practices ("BMPs") to be implemented in the field to minimize impacts, and compensatory mitigation. Efforts to avoid impacts have been a major design consideration for NEP, as noted throughout this document. Where avoidance will not be practicable, appropriate construction BMPs to minimize impacts and/or compensatory mitigation will be implemented. Mitigation measures are discussed by subject matter in each Section of this SEIR, and then presented comprehensively in *Section 9*. *Table 1-5* includes a few examples of each type of mitigation.

Table 1-5: Examples of Mitigation Measures

Avoidance / Minimization	<ul style="list-style-type: none">• Project utilizes an existing transmission line ROW, and no new ROW acquisition is required;• Where practicable, replacement structures are located close to existing structures;• Conducted constructability reviews to avoid/minimize work envelopes within resource areas;• No new permanent stream crossings; and• Utilize existing roadways for construction.
Construction BMPs	<ul style="list-style-type: none">• Soil erosion and sediment controls;• Use of temporary construction matting for access roads across wetlands or to establish safe and stable construction work areas/envelopes within wetlands, where necessary; and• Restore wetlands after transmission facility construction to pre-construction configurations and contours to the extent practicable.
Compensatory Mitigation	<ul style="list-style-type: none">• Where permanent loss of BVW is unavoidable (due to fill for structure foundations), replicate BVW to satisfy state and local wetland regulations.

The MEPA regulations at *301 CMR 11.07(6)(k)* require that the EIR contain the proposed Section 61 Findings. In accordance with this requirement, NEP's proposed Section 61 Findings for the Project are presented in *Section 9.5*.

Since the EENF filing, NEP has consulted with relevant federal and state regulatory agencies as required in the Certificate (please refer to *Section 10.2* of this SEIR). The mitigation measures presented herein have been developed to satisfy regulatory requirements and fully mitigate the impacts of the Project. In the aggregate, NEP proposed measures will avoid or minimize most environmental impacts and will meet applicable regulatory requirements to compensate for the remaining unavoidable impacts.

2 RESPONSES TO COMMENTS

This Section presents the responses to the Certificate of the Secretary on the EENF and each comment received, per 301 CMR 11.07(6)(l). The Secretary's Certificate for the EENF, along with the comment letters from state agencies, municipal officials, and other interested parties, have been annotated for ease of reference and are presented in **Attachment B: Secretary's Certificate and Comment Letters (Annotated)**. *Table 2-1*, beginning on the following page, presents the comments and the Proponent's direct responses, as well as references to Sections or figures within the SEIR or EENF where additional information can be found.

The annotated comment letters are labeled as listed below for ease of reference. These references also appear in the Comment ID# listed in *Table 2-1*, on the following page.

1. CS: MEPA Certificate for the EENF, EEA #16647
2. MAHC: Massachusetts Historic Commission
3. DEP: Massachusetts Department of Environmental Protection - Waterways
4. DCR: Department of Conservation & Recreation
5. NERO: Massachusetts Department of Environmental Protection - NERO
6. NMCOG: Northern Middlesex Council of Governments
7. DOT: Massachusetts Department of Transport
8. NHESP: Natural Heritage and Endangered Species Program

Comment ID #	Date Received	Comment	Response
CS - Certificate of the Secretary of Energy and Environmental Affairs			
CS-1	2/17/2023	I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.	NEP is submitting this SEIR in accordance with the scope included in the Secretary's Certificate (EEA# 16647).
CS-2	2/17/2023	MEPA EJ regulations and protocols do not apply to the project.	Thank you for confirming that MEPA EJ regulations do not apply to the Project.
CS-3	2/17/2023	As indicated below, comments from Massachusetts Department of Environmental Protection (MassDEP) indicate BVW replication will also be required for tree removal.	Only one comment was received from MassDEP regarding wetland replication (NERO-1): " <i>Wetland replication will be required for permanent impacts to BVW. The Notice of Intent should include a wetland replication plan demonstrating that there is at least 1:1 replication of permanently impacted BVW</i> ". Sections 4.2 & 9.3 of the SEIR describes the proposed wetland mitigation plan for the Project, including wetland replication (at least 1:1 ratio of replication to loss), for all loss of BVW. This plan will be refined during the local permitting process (submission of NOIs to local Conservation Commissions). While tree removal within BVW is considered to be a wetland alteration, it will not result in a loss of BVW, but rather a change in community type from PFO to PSS or PEM. Given the nature of the alteration, it would not be possible to provide replication of the original forested wetland type - any wetland replication areas would create PSS or PEM communities, the same as the replacement wetland community within the altered wetlands. Even if PFO replication were achievable in the long term (it would take many years for trees to mature), this community type is not compatible with overhead transmission lines. As such, viable wetland replication cannot be provided for impacts associated with tree removals. Other in-situ mitigation measures will be employed within wetlands where tree removal is proposed, to minimize the extent to which the vegetative community is altered. Tree removals will be selective, and will only remove tall-growing species which have the potential to interfere with the overhead transmission lines, or trees which are directly obstructing access to the ROW. Trees will be cut at stump, and root balls left intact, reducing ground disturbance while facilitating the regrowth (via suckering), of some tree species. Understory shrub and emergent wetland vegetation will be left intact. As such, wetlands subject to alteration due to tree removals will be impacted as little as possible, and will likely regenerate as PSS or transitional PFO/PSS systems.
CS-4	2/17/2023	Comments from DCR note that transfers of interests in state conservation property must meet the requirements set forth in the Executive Office of Energy and Environmental Affairs' (EEA) Article 97 Land Disposition Policy and new M.G.L. c. 3, s. 5A. A transfer in ownership or interest in state conservation property would require legislative authorization by the General Court through a two-thirds supermajority roll call vote.	No transfers or changes of use in state conservation property are proposed as no new easement rights are required for NEP to access its ROW or to perform work within its ROW and Article 97 is not triggered by the Project. Details of NEP's easement rights on DCR land were provided to DCR on 11/17/2022, and are recorded in the Middlesex registry of deeds (July 31, 1936), Book 6046, Page 118. NEP will continue to discuss these issue with DCR, as needed.

CS-5	2/17/2023	As detailed in the Scope below, the Single EIR should provide further justification for relocating the new structures to the south of Line 339 and closer to sensitive resource areas (IVW, BVW, and PVP habitat) within Estimated and Priority Habitat.	Please refer to Section 1.5 of the SEIR for details of the alternatives considered for realignment. In summary, maintaining the line in its current location was deemed infeasible, as achieving safe line clearances would require extensive tree removal to the north of the line (where a large number of very tall white pine trees have grown), in an area where NEP does not have easement rights. In order to perform the entire ACR Project on schedule, and within the limits of existing easements, NEP proposes to relocate the line to the south, requiring tree removals within a fragmented strip of forest in between two existing ROWs. Although wetlands are present within this area, compensatory mitigation will be provided for wetland loss (see Sections 4.2 & 9.3 of the SEIR), and surveys of isolated wetlands will be conducted in Spring 2023 (prior to works), to establish whether any areas support vernal pool activity.
CS-6	2/17/2023	The Proponent should consider reuse of cleared trees for long-lived wood products to the greatest extent practicable.	Where tree removals are proposed, NEP's forestry best practices for disposal will be used in all cases; provided, however, that in cases where NEP has easement/access rights but is not the landowner, NEP will abide by the terms of the easement document or as NEP may be directed by the landowner.
CS-7	2/17/2023	The Proponent proposes to maintain all new access roads (including those which extend beyond the existing easement) once they are constructed, meaning that it will need to obtain additional easements from landowners. As noted above, the Single EIR should report all impacts associated with access roads both on- and off-ROW.	No proposed access roads are outside of NEP's existing easement rights. The easement to use the access roads to access its ROW are contained within NEP's deeded easement rights. Accordingly, no new easement rights are required.
CS-8	2/17/2023	It is unclear if permanent work pads are accounted for in the 7.7 acres of permanent land alteration. This should be clarified in the Single EIR.	New/improved permanent work envelopes at selected structures will result in approximately 2.5 acres of permanent impacts. In addition, ~5.17 acres of permanent impacts from access road widening are proposed (totaling ~7.7 acres). Please note that neither of these permanent impacts are considered a land alteration, as they involve restoring historic access roads and work pads in their original locations (where these features have been degraded/eroded over time). The only Project activity considered to be a land alteration is the 2.33 acres of forest conversion / tree removal, which is necessary for line realignment (plus the additional 41 trees being removed for off-ROW access). The distinction between land alteration and other permanent impacts was not worded clearly in the EENF, and has been amended in the SEIR.

CS-9	2/17/2023	The Single EIR should indicate the acreage of impact associated with additional clearing beyond that covered by the VMP.	In total, 2.33 acres of tree removals are proposed within the ROW (for line realignment between Structures 91 - 98), and a further 41 individual trees will be removed along an off-ROW access road. Tree removals for line realignment will be selective, and only tall-growing species (which have the potential to interfere with the overhead transmission lines), will be removed. Off-ROW tree removals will be limited to trees directly obstructing access to the ROW for specialized utility equipment. Trees will be cut at stump, and root balls left intact, reducing ground disturbance while facilitating the regrowth (via suckering), of some tree species. Understory shrub and herbaceous vegetation will be left intact, as far as possible.
CS-10	2/17/2023	A summary of all tree removal impacts in the ROW and off-ROW should be provided in the Single EIR.	Please refer to Section 3.1 of the SEIR for a summary of tree removal impacts.
CS-11	2/17/2023	Comments from NHESP state that the project must be conditioned in order to avoid a Take. Anticipated conditions include timing restrictions and protective measures for placement and removal of construction matting within Priority Habitat. As noted in comments, provided all conditions are implemented and there are no changes to the project plans, this project is not anticipated to result in a Take of state-listed species. The Single EIR should include commitments to implement the conditions identified by NHESP.	Details of specific BMPs and avoidance and minimization measures for use within rare species habitats are provided in Section 5.4 of the SEIR, and in Attachment E . Measures will include TOY restrictions, the use of amphibian-friendly sediment and erosion controls, preparation of a rare amphibian Protection Plan, restrictions on the area of grading and matting allowed for work envelopes, and the submission of compliance reports to NHESP. NEP will inform NHESP if any changes are made to the Project within NHESP designated habitats, and will coordinate with NHESP to revise rare species protection measures, as appropriate. Please also see the response to comment NMCOG-2 , regarding TOY restrictions within rare species habitat with respect to climate change induced changes in phenology.
CS-12	2/17/2023	The EENF includes a commitment to provide wetland replication to compensate for the approximately 20,358 sf of permanent fill within BVW but does not propose replication to mitigate the 1.91 acres of permanent forested wetland conversion. Comments from MassDEP note that 1:1 wetland replication will be required for all permanent impacts to BVW. The Proponent states wetland replication locations are under review and will be monitored as required by all local, state, and federal permits. Additional information regarding mitigation for permanent wetland impacts should be provided in the Single EIR.	Please refer to the response to comment CS-3 .

CS-13	2/17/2023	The Single EIR should provide an analysis in support of a finding of water-dependency and review the project's conformance with the relevant c. 91 regulatory standards.	<p>Please refer to Section 4.3 and Table 4-4 of the SEIR for details of the Project's water-dependency and conformance with C.91 regulatory standards. In accordance with <i>310 CMR 9.12(2)(d)</i>, the Project may be considered a water-dependent use as "<i>an infrastructure crossing facility, or any ancillary facility thereto, for which an EIR is submitted, the Department shall find such facility to be water-dependent only if the Secretary has determined that such facility cannot reasonably be located or operated away from tidal or inland waters, based on a comprehensive analysis of alternatives and other information analyzing measures that can be taken to avoid or minimize adverse impacts on the environment, in accordance with M.G.L. c. 30, §§ 61 through 62H</i>". Given that the Project involves the refurbishment of existing transmission lines that cannot reasonably be relocated, the work is a water-dependent use.</p> <p>MassDEP confirmed in their response to the Project EENF (letter dated 2/12/23), that Project activities will be exempt from Chapter 91 licensing, provided that a final Wetlands OOC is issued for the work.</p>
CS-14	2/17/2023	Comments from DCR state that the project will require a CAP for off-ROW access from Water Street (Route 129) and Hemlock Road in Wakefield and note that any permanent changes or improvements to off-ROW access routes on DCR property will require an easement, and thus, trigger the requirements of Article 97. Additional information regarding work on DCR property is required in the Scope below.	Please refer to CS-4.
CS-15a	2/17/2023	Comments from MassDOT confirm that Permits will be required for temporary construction access, overhead wire crossings of the above listed state routes, and new access roadways proposed within the state highway right-of-way. To minimize impacts, the Proponent will develop a Traffic Management Plan for review and approval by MassDOT and will establish traffic control plans for construction traffic on busy streets.	NEP will continue to coordinate with MassDOT throughout the Project design and finalization process, and will provide MassDOT with a Traffic Management Plan prior to commencement of Project activities. Please refer to Section 10.2 and Attachment E for details of the consultation process with MassDOT to-date.
CS-15b	2/17/2023	[The Proponent] will limit access to the ROW by installing signage and barriers (large stones) at access points from public roads.	Throughout the Project design and implementation phases, NEP will evaluate locations in coordination with individual landowners that may require the installation of signs, and/or other types of barriers (e.g., large stones) at access points from public roads.

CS-15c	2/17/2023	The Proponent should continue to work with MassDOT to identify required Permits and any traffic and construction management plans that may be required for temporary work within the state highway layout.	The Project will involve five (5) overhead wire crossings over state roads, four (4) of which will also require access from the state road to the ROW. These include crossings over the I-93 in Andover (an overhead wire crossing only), and overhead crossings plus access from Route 125 & Route 62 in Wilmington, Route 28 in North Reading, and the I-95 in Wakefield. NEP will continue to coordinate with MassDOT throughout the Project design and finalization process, and will prepare any further permits and/or Traffic Management Plans required by the department. Please refer to Section 10.2 and Attachment E for details of the consultation process with MassDOT to-date.
CS-15d	2/17/2023	The Single EIR should describe the location of all roadways under MassDOT jurisdiction and include a figure that identifies locations within the state highway layout where work or construction access will occur.	Please refer to Table 8-2 within the SEIR for a list of all roadways under MassDOT jurisdiction, in relation to the Project area. Map page references are provided in the table.
CS-15e	2/17/2023	[The Single EIR] should describe the outcome of any consultation with MassDOT.	Please refer to Section 10.2 and Attachment E for details of the consultation process with MassDOT to-date.
CS-15f	2/17/2023	The Single EIR should describe the extent of truck traffic that will result from refurbishment and tree clearing activities, including the number of truck trips required.	Please refer to Section 10.3.4 for details of traffic generation resulting from the Project. At this early stage in Project planning, NEP has not yet assigned crews/contractors or equipment for the Project. As such, the exact number of trucks or other equipment required to conduct tree removals is unknown at present. It should be noted however that tree removals will be selective and will only target tall trees with the potential to interfere with line clearances, or trees which are obstructing access to the ROW. Clear-felling or the widespread removal of forested areas is not proposed, and truck/equipment traffic will be minimal. NEP will coordinate with MassDOT throughout the permitting and planning stages of the Project to ensure that adequate traffic management plans are in place prior to work commencing.
CS-16	2/17/2023	Comments from DCR request coordination with the DCR Staff Archaeologist related to potential archaeological resources on DCR property.	NEP and PAL (NEP's archaeological consultant), will coordinate with the DCR Staff Archaeologist to refine appropriate avoidance, minimization, and mitigation measures, for activities which have the potential to disturb cultural or archaeological resources within DCR Land. Details of NEP's Cultural Sensitivity and Protection procedures are provided in Section 6 of the SEIR, and in Attachment C (BMPs).

CS-17	2/17/2023	The EENF indicates that caissons will be installed above the current Base Flood Elevation (BFE) associated with project waterways but does not assess how the height of structures or foundations would affect resiliency as measured by future storm scenarios. The Single EIR should provide additional information regarding the structures' resiliency to climate change.	It was incorrectly stated in the EENF that all structure installations within BLSF would be above BFE. However, although five (5) structure replacements in BLSF will be below BFE, they will not result in a significant alteration from existing conditions. Of the five (5) structure replacements proposed within BLSF, four (4) will be direct embed structures with <i>de minimis</i> impacts on flood storage capacity. One (1) structure replacement (Str 139), is currently supported by a concrete caisson foundation, which will be replaced with a new foundation of approximately the same size. As such, even this larger structure will not result in a significant alteration of BLSF, compared to existing conditions. Given the unpredictable nature of climate change, it is difficult to determine to what extent structure foundations may potentially interact with future flooding and storm scenarios. Structure foundations may be exposed to more frequent inundation, as well as to more extreme temperature variation, due to climate change. The materials and construction methods used for both direct embed and caisson foundations are highly durable, and offer a high degree of resilience to water level fluctuations, extreme temperatures, and increased storm frequency and severity. Replacement structure foundations will be of a similar size to the existing foundations, will take up a relatively small volume of potential flood storage, and will not significantly worsen flood conditions compared to the existing structures. In addition, while the increased height of the new structures (compared to existing structures), may expose them to greater storm stress (such as increased wind stress, and increased risk of lightning strikes), the high tensile steel structures are far more resilient to environmental stressors than the existing wooden structures.
CS-18a	2/17/2023	I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD).	NEP will encourage contractors to use construction equipment with engines manufactured to Tier 4 federal emission standards, or which have been retrofitted for emissions reductions and/or use of alternative fuels.
CS-18b	2/17/2023	If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000).	NEP has a comprehensive set of BMPs for conducting construction work within ROWs, including practices for dealing with oil or hazardous materials (Attachment C). If oil or other hazardous materials are found during construction, NEP will notify MassDEP, in accordance with the Massachusetts Contingency Plan.
CS-18c	2/17/2023	All construction activities should be undertaken in compliance with the conditions of all State and local permits.	All construction activities will be undertaken in compliance with the conditions of all State and local permits.
CS-18d	2/17/2023	I encourage the Proponent to reuse or recycle C&D debris to the maximum extent.	NEP will make efforts to recycle or (if possible) reuse, construction materials and debris removed from the site. Any reuse of materials will be required to conform with strict biosecurity and Invasive Species Management Controls.

CS-19	2/17/2023	The Single EIR should identify measures the Proponent will include to further reduce the impacts of the project since the filing of the EENF, or, if certain measures are infeasible, the Single EIR should discuss why these measures will not be adopted.	Please refer to Section 1.11 of the SEIR for details of Project changes since submission of the EENF.
CS-20	2/17/2023	The Single EIR should describe the project and identify any changes to the project and associated environmental impacts since the filing of the EENF. It should include updated site plans for existing and post-development conditions.	Please refer to Section 1.11 of the SEIR for details of Project changes since submission of the EENF. Updated site plans are also provided in Attachment A .
CS-21	2/17/2023	The Single EIR should describe alternative easements that were considered and include figures that clearly identify any additional permanent and temporary easements that will be required to create access to the ROW.	The 339/349 Line occupies an existing, previously disturbed ROW easement, and as such no alternative easements were considered for the Project, as these would necessitate extensive environmental impacts in previously unimpacted areas. No new easements are required for the Project.
CS-22	2/17/2023	The plans and narrative provided in the Single EIR should identify the extent of any off-ROW clearing required for access road construction.	In total, the removal of 41 trees is proposed to provide off-ROW access. Tree removals are required for access from Lowell Street in Lynnfield only. No other off-ROW access roads require tree removals.
CS-23	2/17/2023	The Single EIR should provide a brief description and analysis of all applicable statutory and regulatory standards and requirements and describe how the project will meet those standards. It should include a list of required Agency Permits, Financial Assistance, or other state or local approvals and provide an update on the status of each.	Table 6 of the EENF provided a list of all required Agency Permits, Financial Assistance, or other state or local approvals, and the Project's conformance with all applicable standards. Table 10-1 of the SEIR provides an update on the status of each of these.
CS-24	2/17/2023	Comments from the Northern Middlesex Council of Governments (NMCOG) noted that their office and the Town of Tewksbury had not been properly notified of the EENF filing. The Proponent should confirm that the distribution list for the Single EIR is correct and that the Town of Tewksbury and NMCOG are included in the distribution.	BSC compiled the distribution list for the EENF based on the most up-to-date contact information available from state and local government webpages and confirmed contacts via phone call/email tests. The complete distribution list was provided to the Project's MEPA Analyst, as required, for distribution to all applicable parties. NMCOG contacted BSC directly on February 8, 2023 to request a copy of the EENF, which was provided via email to (dgarciamoreno@nmcog.org). Please note that, in addition to the SEIR consultation process, there will be ample future opportunities for project review and engagement - particularly during the submission of the Notice of Intent (NOIs), which will be filed with the Conservation Commission of each municipality along the 339/349 Line (due to impacts to wetlands and waterways from the Project). The anticipated filing date for NOIs will be fall/winter of 2023.

CS-25	2/17/2023	The Single EIR should include an expanded alternatives analysis focused on the area between structures 91-98 that provides full justification for dismissing relocating the line to the north and installation of alternative structures that avoid and minimizes environmental impacts and tree clearing within sensitive resource areas such as potential vernal pools, BVW, and rare species habitat. As noted in the EENF, clearing outside of the ROW (and securing new easements with landowners) is proposed in other locations and should be further explored between structures 91 to 98 where sensitive resource areas might be avoided.	Please refer to Sections 1.5 & 3.1 of the SEIR for full details of the alternatives considered for line realignment. Please note that NEP are <u>not</u> securing new easements for any part of the Project - off-ROW tree removals and access road improvements are permissible under existing easement rights, as they are necessary to allow NEP to continue the maintenance and operation of their ROW. Maintaining the line in its current location was deemed infeasible, as achieving safe line clearances would require extensive tree removal to the north of the line (where a large number of very tall white pine trees have grown), in an area where NEP does not have easement rights. In order to perform the entire ACR Project on schedule, and within the limits of existing easements, NEP proposes to relocate the line to the south, requiring tree removals within a fragmented strip of forest in existing ROWs. Although wetlands are present within this area, compensatory mitigation will be provided for wetland loss (see Sections 4.2 & 9 of the SEIR). NEP will review the isolated wetlands located between Structures 91 and 98 to identify any areas that are exhibiting vernal pool activity in the Spring of 2023.
CS-26	2/17/2023	The Single EIR should quantify environmental impacts and provide a conceptual plan for these alternatives. It should compare the environmental impacts with the Preferred Alternatives, in particular, with respect to land alteration, wetland resource areas, potential vernal pools, rare species habitat, and archaeological resources.	An alternatives analysis was provided in Section 2 of the EENF, and is reiterated in Section 1.5 of the SEIR, including the relative environmental impacts to land alteration, wetlands, potential vernal pools, rare species habitat, and archaeological resources, associated with each alternative.
CS-27	2/17/2023	The Single EIR should describe how more vegetation could be preserved in sensitive areas between structures 91-98 and should consider and describe opportunities to vary the width of the clearing particularly in locations where the topography is low, and transmission wires are high such that tree clearing in wetland resource areas might be minimized.	Please refer to Sections 1.5 & 3.1 of the SEIR for details of mitigation measures for the line realignment. Tree removals within the forest fragment to the south of the current 339/349 line location (where the line will be relocated), will be selective, and only trees necessary to maintain clearance requirements will be removed. Low-growing tree, shrub, and herbaceous/gramineous species will be retained, and ground disturbance during tree removal activities will be minimized to promote the re-growth of other vegetation. Impacts to wetlands will be minimized as described in Sections 3.1 & 4 of the SEIR, with specific tree removal methods selected based on site conditions. This may include the use of reaching equipment, such as feller bunchers or tree handlers, stationed outside of wetland areas (if feasible), or the use of construction matting for equipment access within wetlands.

CS-28	2/17/2023	This additional tree clearing will be permanent and will be maintained as part of future VMP maintenance but is not included in the reported permanent land alteration impacts. The Single EIR should document the land alteration that will occur as a result of the additional tree clearing and permanent conversion of forested area to shrub/scrub area. Land alteration should also include any clearing that may be required off-ROW to improve/widen existing such as the cart path (in North Reading) or construct new access roads. Off-ROW impacts to wetlands should also be included and updated as part of Wetland Resource Area impacts below.	Land alteration associated with tree removals will include 2.33 acres of selective tree removal for line realignment (between Structures 91 - 98), and the removal of 41 individual trees along an off-ROW access road from Lowell Street in Lynnfield. These areas will be permanently converted from forest to shrub/scrub area. No off-ROW land alteration (i.e. tree removals), will occur within wetland areas.
CS-29	2/17/2023	The Single EIR should provide an update on potential impacts to state-listed rare species habitat, including the acreage of Priority Habitat both on- and off- ROW impacted by the project. The Single EIR should identify proposed measures to avoid, minimize and mitigate those impacts. I refer the Proponent to comments from NHESP for additional guidance on this issue, including potential conditions anticipated to be required to avoid a Take of state-listed species.	Please refer to Section 5 of the SEIR for details of impacts and proposed mitigation within rare species habitat. In total, ~8.47 acres of impacts are proposed within NHESP Estimated/Priority Habitats, including 7.43 acres within the ROW and 1.04 acres off-ROW. Within-ROW impacts will affect ~4.82% of the available NHESP designated habitat within the ROW. Based on coordination with NHESP to-date, it is anticipated that a "Take" of rare species can be avoided, provided that the conditions described in Section 5.2 of the SEIR are followed.
CS-30	2/17/2023	The Single EIR should address the comments from the Franklin Regional Council of Governments (FRCOG) which identify a concern regarding potential impacts to rare species within the project site, especially as it relates to changes in the breeding season due to climate change.	Please refer to Section 5 of the SEIR for details of impacts and proposed mitigation within rare species habitat. As highlighted by NMCOG (NMCOG-2), phenological changes due to climate change are leading to shifts in some species active seasons. While the OMP agreed to between NEP and NHESP does not explicitly address this issue, the window for "sensitive dates" applied by NHESP (for active seasons, breeding seasons, in-water migrations, etc.), is deliberately broad, and should provide adequate coverage for early and late seasonal variation in activity. For the majority of the rare species habitat transected by the Project, BMPs required by the OMP apply year-round (such as habitat avoidance).
CS-31	2/17/2023	The Single EIR should ensure that estimates for impacts to wetland resource areas are conservative and account for all temporary and off-ROW impacts.	All estimates of wetland resource area impacts are conservative and are clearly separated into permanent impacts (fill or tree removals), and temporary impacts (temporary use of construction matting). Both within ROW and off-ROW impacts are included.

CS-32	2/17/2023	The Single EIR should describe to what extent the construction matting would necessitate alteration of Bank or LUW. The Single EIR should detail the amount of Bank impact at each location and further describe the restoration process.	The use of construction matting to provide access within wetlands, LUW, and across Bank, is a standard BMP used by NEP to avoid and minimize impacts to these sensitive resource areas. Construction matting distributes the weight of heavy equipment, avoiding soil compaction or rutting within in areas with soft ground. No alteration of Bank or LUW is anticipated as a result of the use of construction matting to cross these resource areas. Vegetation management within Bank (including tree removals), is discussed separately from impacts associated with the use of construction matting, as described in Section 4.2 of the SEIR. Mats will be placed so as to completely span rivers/streams, and their associated Banks. Within LUW, construction mats will be anchored (as described in the BMPs provided in Attachment C), to avoid disturbance within LUW. Although no impacts are anticipated, NEP has conservatively included the total area of construction matting within Bank (288-sf), as potential impact area. Impacts associated with matting are most likely be temporary, associated with light reduction/shading. Although it is not anticipated, if ground disturbance within Bank should occur, NEP will employ appropriate stabilization and restoration measures to ensure that Bank and watercourses are protected. These are described in Attachment C , and may include (as applicable); use of erosion matting, seeding/planting of disturbed areas, installation of stone/rip-rap, and use of sediment and erosion controls to protect watercourses.
CS-33	2/17/2023	As noted above, prior to submitting the Single EIR, the Proponent should analyze the PVPs to determine whether they are eligible to be certified (including the three potential vernal pools that will be impacted). The results of this analysis should be presented in the Single EIR. In addition, the Proponent should evaluate areas of tree clearing between structures 91-98 to identify any additional PVPs, as an unidentified PVP was noted on the MEPA site walk on January 25, 2023. As noted above, the Single EIR should describe efforts to avoid, minimize, and mitigate impacts especially between structures 91-98.	Please refer to Section 4.1 of the SEIR for details of the vernal pool survey conducted for the 339/349 Line ROW. NEP will review the isolated wetlands located between Structures 91 and 98 to identify any areas that are exhibiting vernal pool activity in the Spring of 2023. Please note that NEP is not required/authorized to certify vernal pools within their ROW easement, which transects land owned by multiple private and municipal bodies.

CS-34	2/17/2023	Comments from MassDEP assert that wetland replication will be required for permanent impacts to BVW including for fill associated with replacement structures and tree clearing and should be included as part of the Notice of Intent in each community. The Single EIR should include a commitment to provide this replication including identification of approximate locations if available.	Please refer to the response to CS-3.
CS-35	2/17/2023	The Single EIR should provide additional information regarding which portions of the project cannot be located or operated away from Meadow Brook, Shawsheen Brook, Martins Brook, Martins Brook Pond, the Saugus River, and the unnamed waterways which are non-tidal, navigable rivers/streams subject to jurisdiction pursuant to c. 91 and the Waterways Regulations. The analysis provided in the Single EIR should support a finding of water-dependency as required by 310 CMR 9.12(2)(d) and review the project's conformance with the relevant c.91 regulatory standards (if applicable).	Please refer to the response to CS-13 and to Section 4.3 of the SEIR for details of the Project's water-dependency and conformance with C.91 regulatory standards.
CS-36	2/17/2023	The Proponent should schedule a pre-application consultation with MassDEP Waterways as requested in comments and should provide an update on coordination in the Single EIR.	NEP will schedule a pre-application consultation with MassDEP Waterways, regarding the C.91 status of existing and replacement wire crossings over navigable rivers. Please refer to Section 4.3 of the SEIR for further details.

CS-37	2/17/2023	The Proponent indicates that it may have existing rights to access the ROW through DCR property; however, as indicated in comments from DCR, additional information is needed to determine if new permanent easements are required which would require disposition of state-owned land protected by Article 97 of the Amendments to the Massachusetts Constitution. As requested by DCR, the Single EIR should include verification of the deeded easements for the ROW within Breakheart reservation by either including a copy of the easement document(s) or the registry book and page reference(s).	Please refer to the response to CS-4.
CS-38	2/17/2023	The Single EIR should identify impacts (temporary and permanent) to Article 97 Land and proposed measures to avoid, minimize and mitigate impacts. The alternatives analysis and proposed mitigation in the Single EIR should address compliance with each of the six criteria identified above (as required). The Proponent is directed to consult with DCR regarding the applicability of Article 97 prior to filing the Single EIR.	The Project does not require Article 97 land disposition and does not trigger the Article 97 Policy. NEP will continue to work with DCR on these issues, as needed. Please refer to Section 3.1 of the SEIR for details of the Project's impacts (permanent and temporary), to DCR property, and proposed measures to avoid, minimize, or mitigate these impacts.
CS-39	2/17/2023	As requested in comments, the Proponent should coordinate with DCR's Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections of the ROW, and along access routes identified by the Proponent.	NEP will coordinate with the DCR staff Ecologist and Archaeologist regarding all activities proposed within DCR owned Land. Please refer to Attachment E for details of correspondence to-date.
CS-40	2/17/2023	The Single EIR should provide an update on coordination with MHC.	Please refer to Section 6 of the SEIR, and Attachment E , for an update on coordination with MHC to-date. Coordination with MHC is ongoing, and will continue throughout Project planning, permitting, and construction.

CS-41	2/17/2023	While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design recommendations from the MA Resilience Design Tool. The Single EIR should include a narrative explaining whether proposed infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070. The Single EIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is taking to improve asset resiliency over a longer-term horizon.	Please refer to Section 7 of the SEIR for a discussion of the Project's climate resilient design considerations. As highlighted by the MA Resilient Design Tool, the Project is at high risk from urban and riverine flooding, and from extreme heat. The Project addresses these risks in several ways: 1) Replacement structures will harden the transmission line infrastructure, making it more resilient to water damage and decay; 2) The installation of structures reinforced with caisson foundations will increase infrastructure resiliency, particularly in wetland resource areas increasingly susceptible to inundation. 3) Stormwater management features, such as rip-rap at the base of access roads and rip-rap diversions, will allow water to quickly drain during heavy precipitation. These design considerations are discussed in more detail in Section 7 of the SEIR.
CS-42	2/17/2023	In particular, the Single EIR should discuss whether new foundations are being elevated above any defined base flood elevations or other similar water/flood elevation measure to ensure that the structures are resilient to future flooding risks.	Please refer to the response in CS-17.
CS-43	2/17/2023	Where impervious/semi-pervious area is created and stormwater management is required, the Single EIR should address the recommendations from the MA Resilience Design Tool, including whether the stormwater management designs will be resilient to future climate conditions including the 50-year (2% chance) storm as of 2070 (9.5 inches).	A small increase in imperviousness is proposed as a result of the structure replacement activities (impervious structure foundations), and access road widening/construction (semi-pervious gravel surfaces). In total, approximately 1.1 acres of caisson foundations (impervious concrete), and 5.17 acres of access road improvements (semi-pervious gravel), are proposed along the entire 653.62 acre Project area. Please note that this increase in impervious area is dispersed over the entire ROW. Therefore, it is expected that any changes in stormwater runoff would be negligible. The MA Resilient Design Tool indicated that the Project is at high risk from urban and riverine flooding, as well as from extreme heat.

CS-44	2/17/2023	The Single EIR should further describe mitigation in areas of access road creation where there are steep slopes and severe erosion potential including temporary and permanent stabilization methods.	Please refer to the BMP details provided in Attachment C for specific mitigation measures employed on steep slopes, or in areas with severe erosion potential. NEP will ensure all slopes are stabilized in accordance with the EPA NPDES CGP, and other applicable permit conditions. Applicable erosion control measures may include: erosion control blanket, riprap stabilization, and/or seeding with native conservation seed mix.
CS-45	2/17/2023	The Single EIR chapter should include an updated comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the impacts of the project. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.	Please refer to Section 9 of the SEIR for a description of all measures designed to avoid, minimize, and mitigate the impacts of the project. This includes Table 9-1 & 9-2 , which identify mitigation measures, costs, responsible parties, and the schedule for implementation. Please also see project specific BMPs in Attachment C . Draft Section 61 findings are included separately in Section 9.5 of the SEIR.
CS-46	2/17/2023	The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF that specifically address each issue raised in the comment letter;	A copy of the Secretary's Certificate, and each comment letter received, is included in Attachment B .
CS-47	2/17/2023	the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis. A copy of the Single EIR should be made available for review in the Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus Public Libraries.	Copies of the SEIR will be provided to the public libraries of the Towns of Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus. Additional hard copies of the SEIR will be available upon request.
MAHC - Massachusetts Historic Commission			

MHC-1	2/1/2023	When the applicant has considered and developed feasible measures to avoid and protect significant or potentially significant historic and archaeological properties, and the identification and evaluation efforts are completed, the MHC looks forward to receiving the Corps' findings and determinations for the Project and to participating with other consulting parties to reach agreement to resolve any adverse effects to historical and archaeological properties.	Cultural and archaeological avoidance, minimization and mitigation measures are currently under discussion, and will involve ongoing coordination between PAL, MHC, the Tribes, and DCR Archaeologists (for areas within DCR Land). MHC will be kept informed as these plans develop.
DEP - Massachusetts Department of Environmental Protection - Waterways			
DEP-1	2/10/2023	The Department has determined that sections of the Meadow Brook, Shawsheen Brook, Martins Brook, Martins Brook Pond, the Saugus River, and some unnamed waterways are non-tidal, navigable rivers/streams subject to jurisdiction pursuant to M.G.L Chapter 91 and the Waterways Regulations, per 310 CMR 3.04(1)(e).	No response required.
DEP-2	2/10/2023	Pursuant to 310 CMR 9.05(3)(g)(1), The Department determines that portions of said work, which includes but is not limited to, the overhead wire maintenance and replacement of overhead wire with optical ground-wire may be exempt from Chapter 91 licensing provided that a final Wetlands Order of Conditions is issued for the said work under M.G.L. Chapter 131, § 40 and 310 CMR 10.00.	Final Wetlands Order of Conditions will be obtained for all C.91 jurisdictional water crossings prior to the commencement of work. This will include Orders of Conditions from the municipalities of Tewksbury (unnamed river), Andover (Shawsheen River), Wilmington (Martins Brook), North Reading (Ipswich River), Lynnfield and Wakefield (Saugus River).
DEP-3	2/10/2023	The Department recommends that the Proponent schedules a pre-application consultation as the project design phases are completed, pursuant to 310 CMR 9.11(1).	NEP will schedule a pre-application consultation with DEP once Project design plans have been further refined. NEP anticipates scheduling the pre-application meeting with DEP in the Spring of 2023.
DCR - Department of Conservation & Recreation			
DCR-1	2/9/2023	DCR requests verification of deeded easements for the ROW within Breakheart Reservation, by providing DCR with a copy of the easement document(s) or the registry book and page reference(s).	Details of NEP's easement rights on DCR land were provided to DCR on 11/17/2022, and are recorded in the Middlesex registry of deeds (July 31, 1936), Book 6046, Page 118.

DCR-2	2/9/2023	DCR requests that the Proponent provide additional information about rights to and planned use of the access routes over DCR land, including what, if any, work is proposed, and whether access will be needed after construction is complete. Any permanent changes or improvements to off-ROW access routes on DCR property will require an easement and, thus, trigger the protections of Article 97.	Details of the off-ROW access road improvements proposed within DCR land are provided in Section 3.1.5 of the SEIR, and are depicted on the Environmental Resources Map in Attachment A . Details of NEP's easement rights on DCR land were provided to DCR on 11/17/2022, and are recorded in the Middlesex registry of deeds (July 31, 1936), Book 6046, Page 118.
DCR-3	2/9/2023	DCR requests coordination with DCR's Staff Archaeologist related to potential archaeological resources.	NEP and PAL (NEP's archaeological consultant), will coordinate with the DCR Staff Archaeologist to refine appropriate avoidance, minimization, and mitigation measures for activities which have the potential to disturb cultural or archaeological resources within DCR Land. Details of NEP's Cultural Sensitivity and Protection procedures are provided in Section 6 of the SEIR, and in Attachment C (BMPs). Consultation with MHC, DCR, and the Tribes is ongoing, and a site walk will be convened prior to the commencement of work.
DCR-4	2/9/2023	DCR requests coordination with DCR's Staff Ecologist related to wetlands, rare species habitat, and proposed tree removal within sections of the ROW in Breakheart Reservation.	NEP and BSC (NEP's ecological consultant), will coordinate with the DCR Staff Ecologist to develop appropriate avoidance, minimization and mitigation measures for activities which have the potential to impact wetlands or rare species habitat within DCR Land. Consultation with DCR is ongoing, and a site walk will be convened prior to the commencement of work.
DCR-5	2/9/2023	DCR requests that trees identified for removal be flagged. The Ecologist will review the flagged work limits and work with the Proponent to identify mitigation for the removal of trees and the conversion of habitat.	No tree removal is proposed within DCR Land, either on or off-ROW.
DCR-6	2/9/2023	The Staff Archaeologist will coordinate with the Proponent and their cultural resource consultant to develop and implement measures to avoid, minimize, or mitigate adverse effects to significant historic and archaeological resources within DCR property.	NEP and PAL (NEP's archaeological consultant), will coordinate with the DCR Staff Archaeologist to develop appropriate avoidance, minimization and mitigation measures for activities which have the potential to disturb cultural or archaeological resources within DCR Land. Consultation with DCR is ongoing, and a site walk will be convened prior to the commencement of work.
DCR-7	2/9/2023	Environmental permits for work activities on DCR land must be signed by the Department as 'Owner' following review by DCR staff members and prior to submission to regulatory agencies.	All environmental permits for work within DCR land will be submitted to DCR for review and signing, prior to their submission to regulatory agencies.

NERO - Massachusetts Department of Environmental Protection - Northeast Regional Office			
NERO-1	2/10/2023	Wetland replication will be required for permanent impacts to BVW. The Notice of Intent should include a wetland replication plan demonstrating that there is at least 1:1 replication of permanently impacted BVW.	Wetland replication plans will be finalized during later design stages of the Project and will be submitted to the Conservation Commission of each municipality where wetland loss is proposed. Replication plans will conform with all requirements of the WPA and local wetlands bylaws and will be of at least 1:1 ratio of replication to loss (and greater where stipulated by local bylaws). Wetland replication areas will be monitored for at least two full growth seasons, or until at least 75% vegetation cover has been reached. Wetland monitoring reports will be submitted to the jurisdictional Conservation Commissions. Please note that wetland replication is proposed for all wetland loss (associated with fill within wetlands), but not for other "permanent impacts" associated with tree removals. While tree removal within BVW is considered to be a wetland alteration, it will not result in a loss of BVW, but rather a change in community type from PFO to PSS or PEM. Given the nature of the alteration, it would not be possible to provide replication of the original forested wetland type - any wetland replication areas would create PSS or PEM communities, the same as the replacement wetland community within the altered wetlands. Even if PFO replication were achievable in the long term (it would take many years for trees to mature), this community type is not compatible with overhead transmission lines. As such, viable wetland replication cannot be provided for impacts associated with tree removals. Other in-situ mitigation measures will be employed within wetlands where tree removal is proposed, to minimize the extent to which the vegetative community is altered. Tree removals will be selective and will only remove tall-growing species which have the potential to interfere with the overhead transmission lines, or trees which are directly obstructing access to the ROW. Trees will be cut at stump, and root balls left intact, reducing ground disturbance while facilitating the regrowth (via suckering), of some tree species. Understory shrub and emergent wetland vegetation will be left intact. As such, wetlands subject to alteration due to tree removals will be impacted as little as possible and will likely regenerate as PSS or transitional PFO/PSS systems.
NERO-2	2/10/2023	The project will require an Order of Conditions issued by the local Conservation Commission and will require a 401 Water Quality Certification for impacts to Vegetated Wetlands greater than 5,000 square feet.	A Notice of Intent (NOI) will be submitted to each of the municipalities where wetland impacts, and/or C.91 jurisdictional river crossings, are proposed. It is anticipated that NOIs will be filed in Fall/Winter 2023. A 401 WQC is currently in preparation, and it is anticipated that this will be filed with MassDEP in Summer 2023.
NMCOG - Northern Middlesex Council of Governments			
NMCOG-1	2/10/2023	Given the extent of the project and impact area, as well as the diverse species that live within, NMCOG remains concerned about the mitigation activities proposed by the consultant [in relation to phenology and climate change - see comment NMCOG-2].	<i>Please see also the response to comment NMCOG-2, below.</i> In total, the Project route transacts mapped habitat for twelve (12) state or federally-listed wildlife species: one (1) mammal, four (4) birds, one (1) amphibian, and six (6) invertebrates within mapped polygons located along portions of the Project route. Details of site and species-specific mitigation strategies are currently under discussion with NHESP, and A MESA Project Review Checklist was submitted to NHESP, and an initial determination received on 02/15/23. NEP and their contractors will comply with all requirements outlined by NHESP.

NMCOG-2	2/10/2023	Given the extensive availability of this knowledge and the growing importance of phenology in the context of climate change, NEP needs to conduct additional studies to analyze the breeding seasons of the rare species within the project site. Additionally, NEP should consider including additional time buffers to the species-specific "sensitive dates," to ensure that impacts are minimized. Furthermore, NMCOG recommends that NEP develop procedural guidelines on construction if surveys in a given location find that there are significant signs of critical seasonal activity, such as nesting, outside of the sensitive dates. If the above guidelines and procedures exist, NMCOG recommends that NEP and affiliates communicate them to all parties involved in this project as soon as possible.	Consultations regarding the presence of rare species and their habitats along the Project route are being conducted with NHESP, and are currently ongoing. At present, it is anticipated that a "take" of rare species or their habitats can be avoided, provided that the conditions outlined in Section 5 of this SEIR are followed. An initial determination was received from NHESP on 02/15/23 (NHESP file# 22-41435), and consultation is ongoing to ensure that appropriate avoidance, mitigation, and time-of-year (TOY) restrictions, are employed. As highlighted by NMCOG (NMCOG-2), phenological changes due to climate change are leading to shifts in some species active seasons. While the OMP agreed to between NEP and NHESP does not explicitly address this issue, the window for "sensitive dates" applied by NHESP (for active seasons, breeding seasons, in-water migrations, etc.), is deliberately broad, and should provide adequate coverage for early and late seasonal variation in activity. For the majority of the rare species habitat transected by the Project, BMPs required by the OMP apply year-round (such as habitat avoidance).
NMCOG-3	2/10/2023	The consultant has failed to effectively engage all the affected communities in providing feedback on the proposed project. Despite being contacted by a representative from BSC Group, Inc., to confirm a point of contact, notice of the remote consultation session and site visit were sent to an inactive email and failed to include any representatives from the Town of Tewksbury.	BSC compiled the distribution list for the EENF based on the most up-to-date contact information available from state and local government webpages and confirmed contacts via phone call/email tests. The complete distribution list was provided to the Project's MEPA Analyst, as required, for distribution to all applicable parties. NMCOG contacted BSC directly on February 8, 2023 to request a copy of the EENF, which was provided via email to (dgarciamoreno@nmcog.org). Please note that, in addition to the SEIR consultation process, there will be ample future opportunities for project review and engagement - particularly during the submission of the Notice of Intent (NOIs), which will be filed with the Conservation Commission of each municipality along the 339/349 Line (due to impacts to wetlands and waterways from the Project). The anticipated filing date for NOIs will be fall/winter of 2023.
NMCOG-4	2/10/2023	The consultant and MEPA managers need to ensure that future communications about the project, including remote consultation sessions, site visits, and expanded notifications, are reaching all necessary parties, including active staff from the Town of Tewksbury and Northern Middlesex Council of Governments.	BSC has noted that the MEPA contacts and filing requirements to NMCOG has changed since the EENF submittal. BSC will use the updated MEPA contact list for circulation of the SEIR.
NMCOG-5	2/10/2023	Given the lack of appropriate engagement and a need to consider more comprehensive mitigation strategies that are cognizant of climate change impacts on phenology, further review under the MEPA process appears necessary.	As part of the further environmental and ecological review process of the Project, this SEIR is being submitted to MEPA, and to all applicable parties/reviewing bodies. Additional opportunities for discussion and review of the Project will be available during the later permitting stages, in particular during the submission/review of NOIs, which will be submitted to each Town's Conservation Commission. With regards to the mitigation of impacts to rare species and/or their habitats, an initial determination was received from NHESP on 02/15/23 (NHESP file# 22-41435), and consultation is ongoing to ensure that appropriate avoidance, mitigation, and time-of-year (TOY) restrictions, are employed.

DOT - Massachusetts Department of Transport			
DOT-1	2/13/2023	The Project route will intersect with the state jurisdictional highway layout at multiple locations, including I-93 in Andover, Route 125 in Wilmington, and Route 128 in Wakefield. Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit issued by MassDOT District 4.	The Proponent will coordinate with MassDOT District 4 to apply for a temporary access and utility access permit. The anticipated filing date will be 3 to 4 months prior to the start of construction.
DOT-2	2/13/2023	Further MassDOT permits will be required for temporary construction access, overhead wire crossings of the above-listed state routes, and new access roadways proposed within the state highway right-of-way.	The Proponent will coordinate with MassDOT District 4 to apply for all further applicable permits. The anticipated filing date will be 3 to 4 months prior to the start of construction.
DOT-3	2/13/2023	The Proponent should coordinate with MassDOT District 4 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways.	The Proponent will coordinate with MassDOT District 4 to minimize traffic disruption during Project activities.
NHESP - Natural Heritage and Endangered Species Program			
NHESP-1	2/15/2023	Based on a review of information that was submitted and the information contained in our database, on February 15 2023, the Division determined that the proposed project must be conditioned in order to avoid a Take of state-listed species. These conditions include but are not limited to timing restrictions and protective measures for placement and removal of construction matting within Priority Habitat. Provided conditions are implemented and there are no changes to the project plans, this project will not result in a Take of state-listed species or require a MESA Conservation & Management Permit to proceed.	Details of specific BMPs and avoidance and minimization measures for use within rare species habitats are provided in Section 5 of the SEIR, and in Attachment F . Measures will include TOY restrictions, the use of amphibian-friendly sediment and erosion controls, preparation of a rare amphibian Protection Plan, restrictions on the area of grading and matting allowed for work envelopes, and the submission of compliance reports to NHESP. NEP will inform NHESP if any changes are made to the Project within NHESP designated habitats and will coordinate with NHESP to revise rare species protection measures, as appropriate.

3 LAND ALTERATION, OTHER PERMANENT IMPACTS, STORMWATER, AND HAZARDOUS WASTE

This Section addresses elements in the Scope associated with land alteration, other permanent impacts, stormwater management, and potential hazardous waste impacts, associated with the Project. This Section is organized to address the Scope as follows:

Section 3.1	Land Alteration from Forest Conversion / Tree Removals.
Section 3.2	Within-ROW Permanent Impacts.
Section 3.3	Off-ROW Permanent Impacts.
Section 3.4	Temporary Impacts – Temporary Construction Matting.
Section 3.5	Vegetation Maintenance.
Section 3.6	Operation and Maintenance Plan (OMP).
Section 3.7	Stormwater Management.
Section 3.8	Hazardous Waste.

As noted in the EENF, the Project site is currently an active utility ROW, and the Project is consistent with these existing facilities and activities. Land alteration associated with the Project (i.e. a change in the land use), is limited to the conversion of forested land to managed vegetation. Other permanent impacts associated with the Project (such as access road widening and improvements, and permanent work envelope construction), will occur within areas historically used for these purposes, and as such are not considered a “land alteration”, but rather a “permanent impact” to the area.

3.1 LAND ALTERATION FROM FOREST CONVERSION / TREE REMOVALS

In total, the Project proposes 2.33 acres of land alteration, associated with the conversion of forested land for line realignment between Structures 91 – 98. In addition, 41 trees require removal along the off-ROW access road in Lynnfield, to allow construction equipment to access the ROW⁴.

Line realignment between Structures 91 – 98 is necessary due to the growth of a large number of tall Eastern white pine trees (*Pinus strobus*), along the northeast side of the ROW. These trees are outside of NEP’s easement, and pose a significant electrical hazard, but are located in an area where NEP does not have jurisdiction to remove them. As such, NEP is proposing to re-locate this short section (~0.6 miles), of the 339/349 Line to the southwest, requiring tree removals within a forest fragment between the 339/349 Line and S145/T146 Line ROWs (within NEP’s easement). Tree removals within the realignment area will be selective and will only target tall growing species which pose a hazard to the lines. Although tree removal will occur within areas of BVW and 100-ft Buffer Zone to BVW, impacts will be minimized as far as practicable through the use of BMPs. Obtaining a new easement to remove trees within the upland area to the NE of the ROW, rather than the mixed upland/wetland area to the

⁴ Crown area was not estimated for the 41 off-ROW tree removals, as the dense forest cover combined with the infrequency of the removals made this difficult to estimate accurately.

SW, is infeasible, as this would require an Article 97 land transfer. This would result in substantial project delays and costs, which would put the deteriorated electrical infrastructure at increased risk of failure. In order to perform the entire ACR Project on schedule, and within the limits of existing easements, tree removal to the SW of the lines (within the fragmented strip of forest in between two existing ROWs), is the only viable option.

3.2 WITHIN ROW PERMANENT IMPACTS

NEP requires safe and reliable access to each transmission structure for equipment and crews to clear and grade the work area, create a stable work platform, install structures, and string the overhead wires. In order to achieve this, some new within-ROW permanent impacts are required, including the re-establishment/improvement of access roads, and creation of permanent work envelopes.

3.2.1 Within-ROW Access Roads

Environmental and construction specialists have carefully evaluated all access routes to ensure that necessary factors are considered and impacts to sensitive resources are avoided, where practicable, and minimized where impacts are unavoidable. The condition of the existing access roads within the ROW is variable, but can generally be characterized as one of the following:

- An equipment access route that may have formerly been used to install the existing lines (often evidenced by historic vehicle tracks/rutting) but is now substantially overgrown and does not provide a safe/stable travel surface for equipment. This type of road requires substantial improvement (grading, widening, addition of fresh stone), in order to meet modern safety standards for access by specialist utility equipment.
- A partially overgrown cart road, with a grassy vegetated surface, thin topsoil veneer, and firm gravel base. This type of road requires some improvement (likely widening and addition of fresh stone), dependent upon the site-specific conditions.
- A regularly-used access road with a stable, well-defined cobble and gravel surface. This type of access road generally requires no to minimal improvements (such as the repair of potholes).

NEP is proposing to improve the existing access roads (and in some areas of the ROW where access has deteriorated or won't support the equipment needs for the Project the construction of new access roads is necessary), to provide safe access to perform the utility work. In general, access roads are required to be 16-ft wide, with a level stone surface. Access road improvements and construction are shown on the MEPA plans in **Attachment A**, and in general will include:

- **“Type R”** access roads, where only minor repairs are required (such as the filling of ruts and pot-holes). No widening of these access roads is proposed. For these roads, construction is likely to involve the placement of clean stone/gravel within ruts/potholes, followed by tamping-down of this material to ensure a stable road surface. *This is considered an access road improvement.*
- **“Type S”** access roads (typically found in environmentally sensitive areas), where grading is restricted. These roads may be widened to provide a 16-ft travel surface (through the addition

of stone/gravel), but only minimal grading or scraping is allowed. Reinforced shoulders shall be incorporated into the access as part of the widening process and a crown of ½” to ¾” per foot of width of the access is strongly recommended. Installation or restoration of stormwater management features shall be completed as appropriate. *This is considered an access road improvement.*

- “**Type 1**” access roads, where the existing stable sub-base can be capped with clean stone/gravel, and widened to provide a 16-ft travel surface (through the addition of fresh stone/gravel). *Due to the more extensive nature of Type 1 access road works, this may be considered new access road construction within the historic footprint of a past/overgrown access road.*
- “**Type 2**” access roads, where the existing native soil sub-base requires grading, followed by capping with stone/gravel, and widening to create a stable 16-ft travel surface. *Due to the more extensive nature of Type 2 access road works, this may be considered new access road construction within the historic footprint of a past/overgrown access road.*
- “**Type 5**” access roads (generally found on steep slopes), where creating a stable 16-ft gravel access road is likely to require extensive grading, stone addition, and measures to ensure that stone remains in place on steep slopes (including appropriate permanent stormwater management features). *Due to the more extensive nature of Type 5 access road works, this may be considered new access road construction within the historic footprint of a past/overgrown access road.*

After careful planning and field investigations, NEP anticipates that the existing and previously used access roads can be used for transmission lines, thus avoiding the need for new access road locations. In some locations, access spurs to and from pulling and work envelopes within the existing and maintained ROW will be required. For this Project, access roads will typically have a 16-foot wide travel way, with associated road shoulders of approximately 2-ft on either side. However, access road widths will vary depending on site-specific conditions (principally slope and presence of wetlands), and on factors such as the amount of grading (cutting and filling), required. Some wider sections of road will also be required in specific locations (including intersections with public roads), to accommodate equipment turning radii. NEP will limit the width of roads to 16-ft in NHESP mapped habitat. Access road widths cannot be reduced below 16-ft, as this is the minimum required for safe travel of construction equipment such as concrete trucks, low-bed trailers, and cranes. To be conservative, it is assumed that access roads will be maintained after they are improved or reestablished for the Project (except in BVW). NEP’s actions and future maintenance of off-ROW access routes will be guided by agreements with individual property owners.

Within upland areas, improvements to existing access roads include work within RA and 100-foot Buffer Zone to BVW. These improvements may only require minor grading and/or the addition of crushed stone fill to provide a safe travel way for vehicle and equipment access to structure sites during construction. In general, all upland access roads will be mowed, and will undergo minor shaping to provide a safe and level travel surface. Where necessary, roads will be improved with crushed stone fill. Please refer to *Section 8*, and the MEPA Plans in **Attachment A**, for information related to access road improvements. In total, approximately 5.17 acres of permanent impacts are proposed from access road improvements/widening.

3.2.2 Within-ROW Permanent Work Envelopes

Work envelope improvements will depend upon site topography and existing conditions at each structure location. Where site topography allows, work envelopes will be mowed only. Where topography is steeper or the ground surface is uneven, work envelopes will require grading and the placement of stone (or, in sensitive resource areas, construction matting), to provide a stable work surface. Where stone or construction matting is placed in RA or BLSF, this will be removed once construction is complete. Outside of sensitive wetland resource areas, stone work envelopes will remain in place to provide permanent work platforms for future maintenance/emergency work. All work envelopes within wetlands will be matted only, and the temporary matting will be removed once construction is complete. In total, 2.51 acres of permanent impacts are associated with the construction of permanent work envelopes.

3.2.3 Within-ROW Structure Installations

Section 8.2.6 of the SEIR describes the construction methods and impacts associated with structure installations. In total, 84 direct embed and 26 caisson supported structures will be installed as part of the 339/349 Project (this represents both new structure installations, and the installation of replacement structures). Of these structure installations, 30 will occur within BVW, and 15 within BLSF. *Section 4.2.4* of the SEIR describes the mitigation proposed for structure installations within BVW and BLSF.

3.3 OFF-ROW PERMANENT IMPACTS

In addition to the land alteration activities (forest conversion / tree removals), required for some off-ROW access roads, some road improvements / permanent impacts are also required. This includes access road widening, and the addition of fresh stone. Off-ROW access road improvements are proposed at three locations, with a further alternative access route proposed for foot traffic only. Off-ROW access road improvements will consist of the following:

1. **Access to Structures 60 – 62 in Wilmington:** Off-ROW access is required from Lowell Rd / Salem St, through an industrial site (Benevento Companies). No tree removals are required, but access road widening and the addition of fresh stone will be needed. The existing access road in this location is currently used for Benevento Companies' quarry activities.
2. **Access to Structures 96 - 97 in Lynnfield:** Off-ROW access is required from Lowell St, along an existing cart path to a gas compressor station, through Cedar Swamp Conservation Area. The existing access road in this location is currently a dirt cart path, which varies in width from ~4-ft to ~8-ft wide. In order to create a suitable 16-ft wide travel surface, 41 trees require removal⁵, and the access road requires widening and the addition of fresh stone (resulting in ~0.6 acres of new permanent impacts).

⁵ Crown area was not estimated for the 41 off-ROW tree removals, as the dense forest cover combined with the infrequency of the removals made this difficult to estimate accurately

3. **Access to Structures 137 - 139 in Wakefield:** Off-ROW access is required from Water St and Hemlock Rd, through DCR owned land (Breakheart Reservation)⁶. A Construction Access Permit (CAP) will be required from DCR. The existing access road in this locations is currently a dirt cart path, which varies in width from ~12 – 14-ft wide. In order to create a suitable 16-ft wide travel surface, the access road requires widening and the addition of fresh stone, resulting in ~0.3 acres of new permanent impact. No tree removals are proposed within DCR land, either for within-ROW line realignment, or for off-ROW access.
4. **Alternative foot access to Structure 90 in North Reading:** Off-ROW access may be required from Haverhill St, along an existing cart path. The existing access road in this location is currently a dirt cart path, which varies in width from ~4-ft to ~8-ft wide. Construction related equipment will not use this access, but rather enter the ROW directly off Haverhill Street. No improvements are proposed. Access will be used for foot traffic and small vehicles only, in coordination with the landowner.

In total, off-ROW access improvements will require the removal of 41 trees, and ~0.95 acres of permanent impacts associated with the widening/improvement of access road surfaces. Once improved, off-ROW access roads will be maintained.

3.4 TEMPORARY IMPACTS – TEMPORARY CONSTRUCTION MATTING

Temporary construction mats will be placed in wetland resource areas where existing, viable access does not exist. The use of construction mats allows for heavy equipment access within wetland areas, or in sensitive upland areas such as agricultural fields. Temporary construction mats will be used along access routes and at structure locations to create a safe and stable work envelope. Typically, construction mats are wooden timbers bolted together into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. The quantity and alignment of construction matting will vary from location to location depending on site conditions (e.g., topography), and proximity to sensitive resource areas (e.g., vernal pools). Construction mat access roads are generally 16-ft wide, although greater widths are required at turns to ensure that utility equipment can safely maneuver. Please refer to the MEPA Plans in **Attachment A** for a depiction of the proposed construction mat alignment.

The use of construction mats minimizes the need to remove vegetation beneath the access way and helps reduce the degree of soil disturbance and rutting in soft wetland soils. Please refer to EG-303 in **Attachment C** for a detailed description of construction mat procedures and BMPs.

Construction mats are typically installed on top of existing vegetation, however, in some instances cutting large woody vegetation may be required for the safe placement of mats. When vegetation management or mowing is required for mat placement, root balls for trees and shrubs are retained within wetland resource areas. Chipping debris and excessive amounts of slash are removed from wetlands and other resource areas, except in approved instances to provide wildlife habitat. When necessary, construction mats will be used to span streams. Where stream width allows, construction

⁶ Details of NEP's easement rights on DCR land were provided to DCR on 11/17/2022, and are recorded in the Middlesex registry of deeds (July 31, 1936), Book 6046, Page 118.

mats will be installed to span the watercourse in its entirety without stringer placement in the water or any restriction to stream flow. Care will be taken to ensure that the stream bed and banks are not damaged during installation and removal of mats.

Prior to installation, mats will be certified “clean” by NEP’s vendor. “Clean” is defined as being free of plant matter (stems, flowers, roots, etc.), soil, or other deleterious materials. Any equipment or timber mats that have been placed or used within areas containing invasive species within the Project site will be cleaned of plant matter, soil, or other deleterious material at the site of the invasive species prior to being moved to other areas to the Project site to prevent the spread of invasive species from one area to another. The duration, timing, and extent of construction matting has been designed to reduce costs and environmental impacts. Following construction, mats will be promptly removed from BVW and stream spans to allow wetlands to revegetate in-situ during the growing season. While NEP’s preferred approach is to only lay construction mats once for each area, this is ultimately dependent on the availability of transmission line outages. In addition, due to Project restrictions (e.g., outages), the placement of construction mats cannot be limited to winter months when wetland vegetation is dormant. However, construction mats will be placed on top of vegetation to avoid disturbance to the root stock. Impacted resource areas will be restored to pre-construction conditions to the extent practicable. Restoration will include seeding disturbed areas, final grading, and installation of permanent erosion control devices, where necessary, in the adjacent uplands. Wetland restoration areas will be monitored until 75% vegetative cover is achieved or in accordance with applicable agency requirements.

In total, temporary construction matting will result in 16.6 acres of impacts within BVW, 0.1 acres within BLSF, 0.3 acres within IVW, 1 acre within the 100-ft BZ to BVW, and <0.1 acres within Bank. Please note that this is a conservative estimate, and within-ROW and off-ROW impacts from construction matting are anticipated to be lower. For example, NEP has conservatively assumed that the use of construction matting for stream spans may result in impacts to Bank. In practice, streams are spanned in their entirety, and Bank impacts rarely occur.

3.4.1 Permanent Stream Crossings for Access Roads

The Project has no proposed permanent stream crossings for access roads. All proposed stream crossings will be temporary and will be bridged using construction mats laid so as not to impact stream morphology or hydrology.

3.4.2 Breakheart Reservation - Access and within-ROW Activities

Breakheart Reservation is a 652-acre property used for trail-based recreation including hiking, mountain biking, horseback riding and cross-country skiing. The reservation also contains two lakes, with fishing and swimming amenities. Approximately 26.77 acres of the 338/349 Line ROW are located within Breakheart Reservation, between Structures 136 – 144. Activities proposed within the 339/349 Line ROW in Breakheart Reservation include the use of ~19 acres of temporary construction matting for work pads and access roads (within wetlands and other sensitive resource areas), as well as structure maintenance and replacement activities, work envelope grading, access road improvements

(along ~5.17 miles of existing access roads), and access road construction (along ~4.68 miles of existing but degraded access road).

In addition to within-ROW activities in Breakheart Reservation, off-ROW access is required to reach some structures. Proposed off-ROW access within DCR-owned land will be from Water St and Hemlock Rd in Wakefield. No tree removals are required, but these off-ROW access roads will require improvement, including widening to a standard 16-ft travel surface, and the addition of stone. This will result in approximately 0.3 acres of new permanent impacts along these existing access roads. NEP will continue to coordinate with DCR Staff Ecologists and Archaeologists to develop appropriate avoidance, minimization, and mitigation measures, for activities which have the potential to disturb sensitive resource areas.

3.4.3 Other Article 97 Land - Access and within-ROW Activities

In addition to the DCR owned Breakheart Reservation, Project activities are proposed in twelve (12) other locations categorized as Article 97 Lands. These include the Bradford Road Conservation Area, Cedar Swamp Conservation Area, Chestnut Street Conservation Area, Indian Ridge Conservation Area, Martins Brook Conservation Area, Montrose Avenue CR, Partridge Lane Conservation Area, Point Lewis Land, Pumping Station, Reedy Meadow Conservation Area, South Street Conservation Area, and Wellfield (refer to mapping in **Attachment A** for a depiction of Project activities in relation to Article 97 boundaries). Activities proposed within these other Article 97 Lands include structure maintenance and replacements, access road improvements and construction, work envelope grading, tree removals (the 2.33 acres for line realignment occurs within the Cedar Swap Conservation Area), and the use of temporary construction matting.

3.5 VEGETATION MAINTENANCE

Currently, NEP conducts a regular vegetation maintenance program of the existing transmission line ROWs. The vegetation maintenance cycle follows a four- to five-year timeline, and is conducted in accordance with the VMP, following the mandates set by federal and state regulations for the purposes of ensuring safe, reliable delivery of electric services. NEP's ROW vegetation practices encourage the growth of low-growing shrubs and other vegetation which is compatible with overhead electric transmission lines. During construction, additional vegetation management is often required, and general practices typically include mowing and hand-cutting, tree pruning and removal, and wood disposal and management. Subsequent routine maintenance of vegetation along the line will be consistent with NEP's Five-Year VMP.

3.6 OPERATION AND MAINTENANCE PLAN

The OMP identifies the proposed utility work needed to operate and maintain NEP's transmission line system. To protect state-listed species, the OMP and its associated GIS datalayers are annually reviewed by NHESP pursuant to MESA (321 CMR 10.00). This review focuses on proposed utility work within Priority Habitat for state-listed species. Following review and approval, NHESP issues procedures that are incorporated into the OMP and implemented within Priority Habitat where work

will occur. To avoid harm to state-listed species and their habitats, all operation and maintenance activities occurring anywhere within Priority Habitat follow the strictest best management practices and conform to procedures identified by NHESP during its review of the OMP.

3.7 STORMWATER MANAGEMENT

This section discusses how NEP will manage stormwater during all phases of construction. A discussion of how the Project will meet the MA Stormwater Management Standards is provided in *Section 10.3.2. Stormwater management*. BMPs are addressed in *Section 8.2.3*.

3.7.1 Introduction

NEP will submit a Notice of Intent to the USEPA under the NPDES Stormwater Construction General Permit for Stormwater Discharge from Construction Activities. As required under this program, a construction SWPPP will be developed to ensure that BMPs are implemented during construction to address potential impacts.

The SWPPP establishes a construction period contact list, presents a description of the proposed work, and identifies stormwater controls, spill prevention, and inspection practices to be implemented for the management of construction-related storm water discharges from the Project. The SWPPP clearly identifies parties responsible for monitoring and reporting any activities out of compliance with the SWPPP or other environmental permits or approvals, and for handling extraordinary situations. The SWPPP also defines monitoring to occur until all disturbed areas on the site have been stabilized using standard BMPs. Please refer to EG-303 in **Attachment C** for additional information on procedures and policies implemented during construction to identify and control environmental impacts of activities.

Stormwater Management Permits will also be obtained in accordance with the Andover, Lynnfield, North Reading, Tewksbury, Wakefield and Wilmington Town Bylaws. For each municipality, a NOI and Stormwater Management Permit (“SMP”) application (where required) will be concurrently developed and submitted.

3.7.2 Stormwater Management During Construction

During construction, stormwater management practices will be utilized to prevent erosion of construction areas and adjacent undisturbed areas, and to prevent sedimentation of wetland resource areas and watercourses. Stormwater management will be accomplished through stabilization and structural control devices, as well as good housekeeping practices.

Potential sources of stormwater pollution during the construction phase of the Project include erosion and sedimentation resulting from land disturbing activities. Land disturbing activities associated with the Project include structure replacements, grading of work envelopes and access road improvements. General work activities, such as travel to and from job site, also have the potential to result in erosion, fugitive dust, and sediment tracking.

Temporary and permanent erosion and sediment controls will be employed to minimize erosion and transport of sediment into wetland resource areas during the earthwork and construction phases. Proposed sediment control barriers for the Project will include any combination of the following: silt fence, straw wattles, and straw bale barriers. Temporary filter insets may be installed in catch basins or similar drainage structures as needed. Erosion and sediment control measures will be installed prior to construction and will be maintained through the construction period until final stabilization is achieved. On particularly steep or erodible slopes, additional erosion control measures may be employed, including erosion control blanket, riprap stabilization, and/or seeding with native conservation seed mix. Please refer to *Section 8.2.3* for additional information regarding sediment and erosion control devices during construction.

Dust controls will be evaluated and implemented as needed throughout the duration of the Project on all disturbed soils that are subject to surface dust movement and dust blowing. Water or application of calcium chloride or other National Grid approved equivalent in accordance with the manufacturer's guidelines may be used for dust control. During application of water for dust control, care shall be taken to ensure that water does not create run-off or erosion issues.

Structural measures will also be implemented to divert flows away from exposed soils and store flows or otherwise limit runoff and minimize the discharge of pollutants from the site. Structural measures shall be installed on upland soils. Structural measures include, but are not limited to, temporary diversion swales, water bars, fill berms and sediment traps. Stone tracking pads may also be installed at construction entrances to prevent sediment tracking onto public roadways.

Other potential stormwater pollutants likely to be present during construction include petroleum-based products, hydraulic fluids, gasoline, diesel fuel, and antifreeze and coolant. Management of hazardous materials is discussed in more detail in *Section 3.8* and will be described in detail in the SWPPP. Good housekeeping and product specific practices will be implemented to prevent the accidental release of hazardous materials.

Inspections of work areas will occur on a pre-determined schedule until the Project is stabilized. Documentation identifying deficiencies of erosion control measures will be forwarded to the construction supervisor for implementation of corrective measures. As a proactive approach to ensure compliance with environmental permit requirements, all construction personnel will be briefed on the Project's environmental issues and permit obligations prior to construction. Field staff will also be trained to recognize and respond to changing field conditions as they relate to protecting wetland resource areas and preventing sedimentation and stormwater runoff. Regular progress meetings will be held to reinforce contractor's awareness of these issues.

3.7.3 Post-Construction Stormwater Management

Stormwater management practices in the form of permanent drainage swales, plunge pools, splash pads, and vegetated filter strips shall be requested and installed on a case by case basis as warranted to ensure stormwater is contained, controlled, and mitigated. Upon completion of construction, the site will be regularly maintained to ensure that all stormwater features function as designed. SWPPP

inspections will cease following permanent site stabilization as defined by the applicable federal, state, and local permits requirements and regulations.

Final stabilization is achieved after all construction activities are complete. Typically, the following general requirements must be also met. Adequate vegetative and non-vegetative stabilization is observed at work areas. All construction materials, waste and temporary stormwater controls have been removed and properly disposed of. All potential pollutants and pollutant-generating activities associated with construction have been removed from the Project area.

3.7.4 Low Impact Development and Integrated Management Practices

A small increase in imperviousness is proposed as a result of the structure replacement activities (impervious structure foundations), and access road widening/construction (semi-pervious gravel surfaces). In total, approximately 1.1 acres of caisson foundations (impervious concrete), and 5.17 acres of access road improvements (semi-pervious gravel), are proposed along the entire 653.62 Project area. Please note that this increase in impervious area is dispersed over the entire ROW. Therefore, it is expected that any changes in stormwater runoff would be negligible.

All areas where soil disturbing activities have occurred will be promptly stabilized with seed and straw mulch to facilitate rapid revegetation. Therefore, NEP did not consider additional Low Impact Development (“LID”) and Integrated Management Practices as part of the Project.

3.8 HAZARDOUS WASTE

3.8.1 Massachusetts Contingency Plan

Two (2) Activity Use Limitation (AULs), regulated under M.G.L.c.21E and the MA Contingency Plan (310 CMR 40.0000), are located within the Project area. Both AULs are located within the Golden Hills Substation in Saugus, MA (RTN 3-0028298 & 3-0024786). RTN 3-0028298 was associated with an oil release, and notification was given on 01/30/2009. The AUL’s Compliance status is RAO, and the compliance date was 01/29/2013. RTN 3-0024786 was notified on 04/19/2005. The AUL’s Compliance status is RAO, and the compliance date was 04/18/2008. No work is proposed within the limits of the AUL, nor will there be subsurface work within the Substation.

3.8.2 Construction BMPs for Hazardous Waste

Please refer to EG-303, EG-501, EG-502, and EG-1707 in **Attachment C** for a description of NEP’s procedures for managing hazardous waste and contaminated soils, and NEP’s spill response procedures. If oil and/or hazardous material are identified during the implementation of this Project, notification will be made to MassDEP, if necessary. To prevent impacts from hazardous materials, if refueling and maintenance in the field are necessary, vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features and all reasonable environmental precautions will be taken. A paved area, such as a parking lot or roadway is preferred to minimize the possibility of spill or release to the environment. If oil and/or hazardous materials are

found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (*MCP; 310 CMR 40.0000*).

Refueling precautions will include frequent checks for fuel spills, drips, or seeps during the refueling operation. Vehicles are also equipped with spill kits to provide immediate response action, if needed. If it is not practicable to move equipment to a suitable area, special precautions will be employed to prevent oil or hazardous material release to the environment. These precautions include, but are not limited to, deployment of portable basins or similar secondary containment devices, use of ground covers such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

4 WETLANDS, WATERWAYS, AND WATER RESOURCES

This Section addresses elements of the Scope related to wetlands, waterways, and other water resources. This Section is organized to address the Scope as follows:

Section 4.1	Updated Wetlands Impact Assessment
Section 4.2	Updated Wetlands Mitigation Measures
Section 4.3	Waterways Chapter 91 Compliance
Section 4.4	Water Supply Protection

4.1 UPDATED WETLANDS IMPACTS ASSESSMENT

Since the submission of the EENF, impacts to wetland resource areas have been refined to more clearly show within-ROW vs. off-ROW impacts associated with forest conversion/tree removals. Other than the refinement of tree removal impacts, no other changes in wetland impact have occurred since the filing of the EENF. For reference, *Error! Reference source not found.* (below) reiterates the EENF, and provides a break-down of wetland resource area impacts associated with the Project.

Overall, temporary impacts to wetland resource areas are anticipated to be moderate during construction and insignificant over the long-term. Temporary impacts from the Project will result from the placement of construction mats for access roads and construction areas (i.e., work envelopes). Permanent impacts will result from the installation of new structure foundations, and from tree removals within wetlands (where required).

Approximately 2.33 acres of tree removals are required (the majority of which are within wetlands), between Structures 91 – 98, where the 339/349 Line will be relocated to the SW of its current location. Impacted areas will naturally revegetate into transitional forest/shrub/emergent communities, an increasingly uncommon habitat cover type in Massachusetts, which will help to enhance diversity along the ROW. This relocation is necessary due to the growth of a large number of very tall white pine trees (i.e. hazard trees), to the NE of the lines, in an area where NEP does not have easement rights. As discussed in *Section 1.5* of this SEIR (Alternatives Analysis), removing the pine trees to the NE of the ROW is not feasible, as this would require NEP to obtain a new easement, triggering an Article 97 land transfer, and resulting in substantial project costs and delays. Delaying the 339/349 ACR Project would put the deteriorated electrical infrastructure at an unacceptable increased risk of failure. As such, and in order to perform the entire ACR Project on schedule, all work must be conducted within the limits of existing easements.

While realigning the section of the 339/349 Line to the SW of the existing cleared ROW (an area which is within NEP's existing easement), will result in tree removals within BVW and IVW, this area will be substantially restored and maintained as scrub-shrub habitat, as described in *Section 4.2.3*.

Table 4-1: Wetlands Permanently Impacted by Structure Foundations or Tree Removals

Wetland Resource Area	Temporary Impacts	Permanent Impacts
Bordering Vegetated Wetland (BVW) <i>See Section 4: Wetlands and Wildlife</i>	16.6 acres: <ul style="list-style-type: none"> Construction mats for access roads where BVW crossings could not be avoided; and Construction mats for work envelopes & pull pad work envelopes that overlap with BVW. 	2.8 acres: <ul style="list-style-type: none"> Fill for replacement structure foundations in BVW (~0.47 acres); and Tree removal for line realignment within the ROW between Strs 91 – 98 (~2.33 acres).
Riverfront Area (RA)	2 acres: <ul style="list-style-type: none"> Mowing of work areas and access roads; Vehicle access with no change in substrate or grade; and Temporary construction matting for work envelopes and access. 	0.07 acres: <ul style="list-style-type: none"> Structure foundations (~3,230-sf); Grading for work envelopes (as identified on the MEPA General Purpose Plans); and Stabilization material in improved/expanded sections of existing access roads (improvements proposed along approximately 3,300 feet of road).
Bordering Land Subject to Flooding (BLSF)	0.1 acres: <ul style="list-style-type: none"> Temporary construction matting for work envelopes and access. 	0.1 acres: <ul style="list-style-type: none"> Fill for structure foundations. <p><i>Grading for work envelopes and access roads is not included, as these areas will be over-excavated so that no flood storage is displaced.</i></p>
Isolated Wetland	0.3 acres: <ul style="list-style-type: none"> Mowing of work areas and access roads; Vehicle access with no change in substrate or grade; and Construction mats for work envelopes & pull pad work envelopes that overlap with Isolated Wetlands. 	0.04 acres: <ul style="list-style-type: none"> Tree removal.
100-ft Buffer Zone to BVW and Inland Bank	1 acre: <ul style="list-style-type: none"> Mowing of work areas and access roads; Vehicle access with no change in substrate or grade; Grading of work envelopes; and Construction mats for work envelopes & pull pad work envelopes. 	1 acre: <ul style="list-style-type: none"> Fill for structure foundations (~0.3 acres); Tree removal (~0.7 acres); and Stabilization material in improved/expanded sections of existing access roads (improvements proposed along approximately 7,102 feet of road).

4.1.1 Vernal Pools

As described in *Section 4.4* of the EENF, nine (9) Certified Vernal Pools (CVPs), and four (4) Potential Vernal Pools (PVPs), were identified within proximity of the Project area, during delineations conducted between Spring 2020 and Summer 2021. Of these, two (2) CVPs are within state-listed species habitat (albeit habitat listed for terrestrial invertebrate species only). The locations of vernal pools (VPs) are illustrated on the MEPA Plans in **Attachment A**. Only NHESP CVPs are classified as ORWs.

Table 4-2 (below), summarizes the location details for each VP within the vicinity of the Project, and any impacts proposed within 100-ft of VPs. Direct impacts to VPs are limited to the temporary use of 10,000-sf of construction matting for access.

Table 4-2: Vernal Pool Habitat Identified within the Project ROW, by Municipality

Town	Type of pool	Nearest Str	Wetland ID	Notes from ENF
Andover	CVP	43	AN-W8	A small, certified VP located north of the ROW, approx. 150-ft from the closest construction activities.
North Reading	PVP	79	NR-W11	A potential VP located north of the ROW. A small portion of the wetland associated with this potential VP may be matted to form a work envelope at Str 79.
North Reading	PVP	85	NR-W13	A potential VP located south of the ROW. A small portion of the wetland associated with this potential VP may be matted to form a work envelope at Str 85.
North Reading	CVP	91	N/A	A small, certified VP, located within forest to the south of the Project ROW, approximately 130-ft from the closest construction activities.
Lynnfield	CVP	103	LY-W5	A certified VP located within the ROW, within part of a larger wetland complex (LY-W5). Access road grading is proposed within 100-ft of this certified VP.
Lynnfield	PVP	114	LY-W12	A potential VP located within the ROW, within part of a larger wetland complex (LY-W12). A portion of this potential VP will be matted to form a work envelope at Str 114.
Lynnfield	PVP	115-116	LY-W14	A potential VP located east of the ROW, within part of a larger wetland complex (LY-W14). Off-ROW access is proposed within 100-ft of this potential VP.
Wakefield	CVP	132-133	WA-W11	A certified VP located within woodland to the west of the ROW, within wetland WA-W11. Access road improvements are proposed within 100-ft of this wetland.
Wakefield	CVP	133	WA-W12	A certified VP located within the ROW, within wetland WA-W12. Access road improvements are proposed within 100-ft of this wetland.
Wakefield	CVP	133	WA-W13	A certified, forested VP located to the west of the ROW, within wetland WA-W13. Access road improvements are proposed within 100-ft of this wetland.
Wakefield	CVP	141-142	WA-W18	A certified VP located within the ROW, within wetland WA-W18. No Project activities are proposed within 100-ft of this wetland.
Wakefield	CVP	143-144	WA-W19	A small VP located northwest of the ROW, within wetland WA-W19. Minor access road improvements (filling of ruts and potholes), are proposed within 100-ft of this wetland.
Wakefield	CVP	145	SA-W7	A certified VP located to the east of the ROW, within larger wetland SA-W7. Minor access road improvements (filling of ruts and potholes), are proposed within 100-ft of this wetland.

Following an evaluation of VP locations along the 339/349 Line, new transmission line structures, access roads, and work envelopes were adjusted to avoid or minimize direct adverse effects to vernal pools to the extent practicable, taking into consideration engineering design requirements for the new transmission lines, and the need to maintain safe working conditions during construction. Every effort has been made to comply with *314 CMR 9.06 (4)*.

4.2 UPDATED WETLANDS MITIGATION MEASURES

NEP proposes to provide appropriate wetland mitigation (in collaborative consultation with local, state, and federal resource agencies), to offset all permanent wetland impacts. Mitigation measures proposed

for the Project will include the implementation of appropriate construction BMPs, the restoration of wetlands temporarily impacted by construction, and the provision of wetland replication for wetland loss.

4.2.1 On-ROW state-specific wetland replication; Construction BMPs for Wetlands

When working in or traversing wetlands during construction, NEP will undertake the measures described below, as appropriate, to minimize wetland impacts.

- Install, inspect, and maintain temporary soil erosion and sediment controls, and other applicable construction BMPs, around work sites in or near wetlands to minimize the potential for erosion and sedimentation, mark the limits of wetlands, and restrict crew access, as appropriate.
- Limit grading for structure foundations in wetlands to the amount necessary to provide a safe workspace.
- Install temporary construction matting for access roads across wetlands, where necessary. The type of stabilization measures to be used in wetlands will depend on soil saturation and depth of organic matter.
- Restore wetlands, after refurbishment, to pre-construction configurations and contours to the extent practicable.
- Comply with the conditions of local, state, and federal permit conditions related to wetlands.
- Avoid or minimize access through wetlands to the extent practicable.
- Refuel construction equipment (apart from equipment that cannot practicably be moved) 100 feet or more from a wetland. If refueling must occur within a wetland, secondary containment will be provided.
- Store petroleum products over 100 feet from a wetland.
- Restore structure work sites in, and temporary access ways through wetlands following the completion of line installation activities.
- Prior to moving to other work areas, remove plant matter, soil, or other deleterious material from equipment and construction matting when working at the sites containing invasive species.

Wetlands mitigation during construction will avoid or minimize potential adverse impacts. During structure replacement, any excavated material will be temporarily stockpiled next to the excavation; however, this material will not be placed directly into resource areas. If the stockpile is near wetlands, it will be enclosed by staked straw bales or other erosion controls. Additional controls, such as watertight mud boxes will be considered for saturated stockpile management in work areas in wetlands (i.e., construction mats) where sediment-laden runoff would pose an issue for the surrounding wetland. Following the backfilling operations, excess soil will be spread over unregulated upland areas or removed from the site in accordance with NEP policy.

4.2.2 Construction BMPs for Vernal Pools

In total, 10,000-sf of temporary impacts are proposed within vernal pools, associated with the use of construction matting for access. No permanent impacts are proposed within vernal pools, although some access road improvements, including grading and/or road widening, will occur within the 100-ft Buffer Zone to vernal pools. Please see *Table 4-2* for further details. NEP is not required/authorized to certify vernal pools within their ROW easement, which transects land owned by multiple private and municipal bodies. Isolated wetlands located between Structures 91 – 98 (where line realignment and tree removals are proposed), will be inspected in Spring 2023 to check for any vernal pool activities.

NEP has identified the measures described below to minimize adverse Project impacts on vernal pools:

- Except in areas where access roads and work envelopes must be installed, existing scrub-shrub vegetation within 25 feet of vernal pools will be maintained, consistent with ROW vegetation management requirements.
- If low-growth (scrub-shrub) vegetation must be removed adjacent to vernal pools, the cut vegetation (“slash”) will be left in place to serve as recruitment for leaf litter and coarse woody debris.
- Soil erosion and sediment controls will be installed and maintained along construction access roads and around work envelopes as necessary to protect water quality and to limit the potential for soil deposition into vernal pools. Sediment built up behind these devices will periodically be removed and placed in upland areas, in a manner that will preclude the potential for subsequent deposition into the pools. (Note: The specific types of controls will be determined in the field, in accordance with NEP policies and procedures and consistent with stormwater management requirements for the Project).
- Where existing on-ROW access roads adjacent to vernal pools must be improved, construction mats or corduroy road will be used if practicable; otherwise, clean materials will be used (e.g., clean riprap, gravel, stone or equivalent).
- To the extent that construction timing and outage constraints allow, NEP will attempt to schedule vegetation removal and the installation of access roads and work envelopes in and around vernal pool habitats so as not to interfere with amphibian breeding and migration seasons.
- For Project activities that must occur adjacent to or within vernal pools during amphibian migration periods, measures will be implemented on a site-specific basis to facilitate unencumbered amphibian access to and from vernal pools. Mitigation measures will be identified after taking into consideration site-specific conditions, including the type of construction activity in proximity to a vernal pool, the amphibian species known to occur in the vernal pool, and seasonal conditions. Options to be evaluated to allow amphibian access to vernal pools may include (but not be limited to): placing wood chip ramps at intervals along sediment control fencing in the immediate vicinity of vernal pools; leaving gaps in or staggering the installation of soil erosion and sediment controls; and aligning soil erosion and

sediment controls to avoid bifurcating vernal pool habitat. Installation of any mitigation devices will be based on field and seasonal conditions and will depend on species-specific requirements. Further, in some cases, the objective may be to fence off construction areas near vernal pools, restricting amphibian access to the construction area.

- Construction activities that must occur in or near CVPs and PVPs will conform to the BMPs described in *Section 8* to avoid or minimize the potential for the spread of invasive species to vernal pool habitat.

In addition to these measures, NEP may use a geo-grid (or similar)⁷ for roads adjacent to vernal pools containing rare species to prevent a change in grade and/or the use of erosion and sediment controls that may create barriers to migration. Soil erosion and sediment control devices will be promptly removed upon final re-vegetation and stabilization of the ROW. The specific measures that will be implemented to protect amphibians will be defined in consultation with the involved regulatory agencies.

4.2.3 Restoration of Impacted Wetland Resource Areas

4.2.3.1 Wetlands

Wetlands within the Project ROW that are temporarily impacted by Project construction activities (construction matting for access and work envelopes), will be restored in-kind. The use of construction mats within wetlands is a standard BMP designed to minimize both soil and vegetation disturbance. In areas of low-growing and non-woody vegetation, mats are generally placed atop vegetation, which readily recovers once mats are removed. In areas with shrubby/woody vegetation, some cutting/mowing may be required before mats can be placed. Mats are then placed atop the remaining vegetation, which generally re-grows rapidly from roots or shoots.

Immediately after construction is complete, and access is no longer required to a structure, all temporary fill (i.e. construction mats), will be removed from the wetland. Although construction mats displace the weight load of equipment, depressional grooves or furrows (i.e., rutting) of wetland soil may occur. While rutting is not anticipated to result from wetland matting, it is a potential impact for which NEP have standard mitigation procedures in place. The extent and likelihood of rutting occurring can depend on many factors, including soil texture, moisture content, type of construction mat, and time of year. If the rutting is greater than approximately six inches deep, NEP will re-grade or back-blade these areas to reestablish pre-existing topography and maintain existing wetland hydrology.

NEP will re-grade all affected wetlands, as necessary, to restore preconstruction elevations, configurations, and contours to the greatest practicable extent. Where vegetation has been removed or lost, these areas will be seeded with an appropriate wetland conservation seed mix. Temporary soil erosion and sediment control devices will be maintained until wetland revegetation is deemed successful. Where required, permanent erosion control devices will be installed within adjacent

⁷ Soil reinforcement products.

uplands. No net loss of temporarily affected wetlands along the ROW is proposed. NEP will work with each community's Conservation Commission or authorized representative (i.e., Agent), as well as the USACE, to ensure that the area complies with all performance standards in all applicable wetlands regulations as well as each Order of Conditions.

Where tree removals are proposed within wetlands, resulting in a permanent alteration of vegetation (from forested to scrub/shrub or emergent communities), proposed mitigation will involve the restoration (as far as practicably possible), of impacted wetlands. Due to the nature of the Project, it is not possible to allow areas impacted by tree removal to return to forested conditions, as this would be incompatible with the overhead transmission lines. Instead, wetlands subject to selective tree removal will be restored to create scrub-shrub or emergent habitats. During selective tree removals (only trees which pose a hazard to the lines, or which obstruct access roads, will be removed from wetlands), existing understory or ground vegetation will be retained and protected wherever possible. Measures to protect non-target vegetation may include hand cutting of trees, or the use of reaching equipment (such as feller bunchers or tree handlers), to reduce ground disturbance within wetlands. If construction matting is required in order to access wetlands and perform tree removals, matting will be placed on top of understory vegetation, to protect root balls and reduce ground disturbance. Depending on the extent of understory/ground cover vegetation present, wetlands will either be left to naturally revegetate (except for trees) or will be stabilized and seeded with an appropriate wetland conservation seed mix.

While tree removals will result in a permanent alteration to the vegetative community of select wetlands, it will not result in net loss of wetlands. Furthermore, impacted wetlands will naturally revegetate into transitional forest/shrub/emergent communities, an increasingly uncommon wetland type in Massachusetts, which will help to enhance wetland functional diversity along the ROW. It should also be noted that providing like-for-like wetland replication for tree removals (i.e. replication of forested wetland), would not be possible, even in off-ROW locations where compatibility with transmission lines was not a restriction. Mature trees take far longer to grow than the time available for wetland replication, and restoration within the impacted wetlands (promoting the growth of retained shrub and understory vegetation), will almost certainly achieve a closer proximation of the original wetland conditions than possible in a replication area.

4.2.3.2 Bank and Land Under Water (LUW)

Impacts to Bank associated with the Project will be minimal, and temporary in nature. In total, <0.1 acres of temporary impacts are proposed, associated with the use of construction mats to span streams and LUW for access roads and work envelopes. Mats will be placed so as to completely span both Bank and LUW, and as such no ground disturbance is anticipated within these resource areas. Please refer to NEPs BMP details in **Attachment C** for a depiction of typical construction mat placement, anchoring, and water spans. Temporary impacts to Bank and LUW associated with matting may include temporary shading, and some reduction in wildlife passage (although mats will not obstruct the flow of water). Mats will be removed as soon as construction is complete, and any Bank disturbance (for example, loss of vegetation due to shading, or ground disturbance from mat placement/recovery),

will be restored and stabilized. If vegetation cover has been impacted, the area will be seeded with an appropriate wetland conservation seed mix and monitored until restored.

4.2.4 Wetland Replication

Wherever possible, NEP has attempted to avoid or minimize wetland impacts, in accordance with the MA Inland Wetland Replication Guidelines. Measures including minimizing the size of work areas within wetlands, moving work envelopes to reduce wetland impacts, and adjusting pole replacement locations to avoid wetland areas, were implemented to reduce the area of wetland impacts as far as practicably possible. However, in some areas, wetland losses are unavoidable. In total, ~20,358-sf (0.5 acre) of fill is proposed within BVW.

To ensure that the Project does not create any net loss of wetlands, NEP proposes to provide appropriate wetland replication to offset any permanent wetland fill. Wetland replication will be provided in accordance with local and state regulations, at a minimum of 1:1 ratio of loss⁸. Prospective wetland replication areas will be selected within the ROW to compensate for the permanent fill in federal and state wetland resource areas (i.e., BVW), as illustrated in the MEPA Plans. Preparation of the wetland replication area(s) will meet the general performance standards outlined in the MA Inland Wetland Replication Guidelines, and will include appropriate replication of the soil, hydrologic function, and vegetative community. Features that will be considered when selecting potential wetland replication sites will include the following:

- 1) Presence of an unrestricted hydrological connection.
- 2) Similarity of hydrological regime between the wetland that will be impacted, and the proposed replication site (height of water table, length of inundation/flooding, depth of soil saturation).
- 3) Survey of the major ecological functions performed by the wetland that will be impacted, and measurable criteria for ensuring these functions are successfully recreated in the replication area.
- 4) Similarity of the ecological community between the wetland that will be impacted, and the proposed replication site.

Preparation of the wetland replication areas will include excavation of upland soils and backfilling with hydric soil, application of a suitable wetland seed mix and shrub plantings, and appropriate monitoring to ensure that the replication site achieves at least 75% native vegetation cover within two growing seasons. The wetland replication areas will be excavated to meet the appropriate grades necessary for hydrologic connectivity to the adjacent wetland and filled with suitable hydric soil material (free from invasive species seeds or rootstock). Following establishment of final grades that meet the grade of the adjacent existing wetland, the replication area will be planted with species that occur in the proposed impact area, that have high wildlife habitat value, and/or that are consistent with species in the adjacent existing wetland. Seed mix and shrub plantings will be completed immediately

⁸ Some town bylaws require wetland replication in excess of that implemented by the WPA. Wetland replication designs will conform with all applicable local bylaws, and will provide the larger replication area, where required.

following soils work and grading. Wetland replication areas will be mulched and watered as necessary, and appropriate erosion and sediment controls will be installed prior to work and left in place until the wetland replication areas are fully stabilized. Replication areas will be monitored as required in local, state, and federal permits. Prospective mitigation areas have yet to be determined, but where possible they will be located in areas hydrologically connected to the impacted wetland (with the limitation that all wetland replications will need to be located within land owned by NEP). Replication plans will be refined later in the permitting process and will be submitted with NOIs for each municipality in which permanent impacts to BVW are proposed.

By replicating the wetland hydrology, soils, and vegetation of the impact area, conditions will be established that will allow the replication of wetland functions and values, and thus will protect the interests of the WPA. Interests of the WPA that are associated with hydrologic functioning (public and private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, land containing shellfish, fisheries), will be protected because the wetland replication areas will provide, at a minimum, an equivalent area for groundwater and surface water storage, filtration, and wetland vegetation. Wetland wildlife habitat functions/interests will likewise be replicated, with plant species chosen to replicate the species that were impacted, or because they offer high wildlife habitat value.

4.2.5 BLSF / Floodplain Compensation

While some permanent fill is proposed within areas categorized as BLSF, no significant loss of flood storage capacity will occur in these locations. Four (4) structure replacements located within BLSF will be direct embed structures, with *de minimis* impacts on flood storage capacity. One (1) structure replacement (Str 139), is currently supported by a concrete caisson foundation, and will be replaced with a new foundation of approximately the same size. The new concrete caisson foundations within BLSF will protrude approx. 1-ft above ground level / normal high-water elevation, which is similar to the existing structure foundations installed in these locations. As such, there will be little change in impacts to BLSF, and *de minimis* impacts to flood storage capacity, flow, or water displacement. As such, no Floodplain Compensation is proposed. Sediment controls will be installed along the perimeter of the excavation area to avoid sedimentation of the adjacent wetlands. Following excavation, the disturbed area will be restored, seeded and/or mulched.

In response to comments received on the EENF (regarding future flood scenarios, and resiliency of structures/foundations), it should be noted that the EENF incorrectly stated that all structure installations within BLSF would be above BFE. However, although structure replacements in BLSF will be below BFE, they will not result in a significant alteration from existing conditions. Of the five (5) structure replacements proposed within BLSF, four (4) will be direct embed structures with *de minimis* impacts on flood storage capacity. One (1) structure replacement (Str 139), is currently supported by a concrete caisson foundation, which will be replaced with a new foundation of approximately the same size. As such, even this larger structure will not result in a significant alteration of BLSF, compared to existing conditions. Given the unpredictable nature of climate change, it is difficult to determine to what extent structure foundations may potentially interact with future flooding

and storm scenarios. Structure foundations may be exposed to more frequent inundation, as well as to more extreme temperature variation, due to climate change. The materials and construction methods used for both direct embed and caisson foundations are highly durable and offer a high degree of resilience to water level fluctuations, extreme temperatures, and increased storm frequency and severity. Replacement structure foundations will be of a similar size to the existing foundations, will take up a relatively small volume of potential flood storage, and will not significantly worsen flood conditions compared to the existing structures. In addition, while the increased height of the new structures (compared to existing structures), may expose them to greater storm stress (such as increased wind stress, and increased risk of lightning strikes), the high tensile steel structures are far more resilient to environmental stressors than the existing wooden structures.

4.3 WATERWAYS AND CHAPTER 91 COMPLIANCE

NEP identified the following Chapter 91 jurisdictional areas (see *310 CMR 9.04*):

Perennial Streams: Based on field reviews conducted between Spring 2020 and Summer 2021, 17 perennial streams were identified within or immediately adjacent to the Project ROW. All perennial stream crossings that intersect with the 339/349 Lines (of which there are 15 crossings) were assumed, for purposes of determining c. 91 jurisdiction, to be “normally navigable” by canoe, kayak, raft, or rowboat.

Intermittent Streams: A total of 26 intermittent streams were identified within or immediately adjacent to the Project ROW. All other streams delineated within or immediately adjacent to the ROW are not shown on the most recent USGS topographic maps as intermittent or are depicted as intermittent waterways. According to the field reviews conducted in 2020/2021, bank heights and width are variable.

To determine whether intermittent streams were “normally navigable” under *310 CMR §9.04(1)(e)*, bank height, width and water depth were all considered. Intermittent streams were determined to be navigable if all of the following criteria were met:

- Discernable channel/bank;
- Bank width of three feet or greater; and
- Water depth of twelve inches or greater.

In accordance with comments received from MassDEP on the EENF (dated 2/10/23), Pursuant to *310 CMR 9.05(3)(g)(1)*, the Department determined that portions of said work (including but not limited to the overhead wire maintenance, and replacement of overhead wire with optical ground-wire), may be exempt from Chapter 91 licensing, provided that a final Wetlands Order of Conditions is issued for the said work under *M.G.L. Chapter 131, § 40 and 310 CMR 10.00*. Final Wetlands OOCs will be obtained for all C.91 jurisdictional water crossings prior to the commencement of work. This will include OOCs from the municipalities of Tewksbury (unnamed river), Andover (Shawsheen River), Wilmington (Martins Brook), North Reading (Ipswich River), Lynnfield and Wakefield (Saugus

River). NEP will schedule a pre-application consultation with MassDEP Waterways, once project design phases are completed.

In accordance with 310 CMR 9.12(2)(d), the Project may be considered a water-dependent use as "*an infrastructure crossing facility, or any ancillary facility thereto, for which an EIR is submitted, the Department shall find such facility to be water-dependent only if the Secretary has determined that such facility cannot reasonably be located or operated away from tidal or inland waters, based on a comprehensive analysis of alternatives and other information analyzing measures that can be taken to avoid or minimize adverse impacts on the environment, in accordance with M.G.L. c. 30, §§ 61 through 62H*". Given that the Project involves the refurbishment of existing transmission lines which cannot reasonably be relocated, the work can be considered a water-dependent use.

4.4 WATER SUPPLY PROTECTION

4.4.1 Proposed Work Within Surface Water Protection Areas

Along the Project route, the ROW intersects mapped Surface Water Protection ("SWP") Area polygons in Lynnfield and Wakefield. Mapped SWP Areas are associated with Hawkes Pond and the Saugus River. Activities within BVW that coincides with SWP areas includes structure replacements (both direct embed and caisson foundations), and the placement of temporary construction matting for access and work envelopes. BMPs will be implemented to protect these areas during construction.

4.4.2 Proposed Work Within Wellhead Protection Areas

Wellhead protection areas are important for protecting the recharge area around public water supply ("PWS") groundwater sources. A "Zone I" is the protective radius required around a public water supply well or wellfield, generally determined by the pumping rate of the well or a default radius based on the type of well when there is no metered rate of withdrawal or no approved pumping rate. A Zone II is a wellhead protection area that has been determined by hydro-geologic modeling and approved by the MassDEP Drinking Water Program ("DWP"). In cases where hydro-geologic modeling studies have not been performed and there is no approved Zone II, an Interim Wellhead Protection Area ("IWPA") is established based on MassDEP DWP well pumping rates or default values. Certain land uses may be either prohibited or restricted in both approved ("Zone II") and interim ("IWPA") wellhead protection areas.

The 339/349 Line ROW crosses three (3) Zone II areas of PWS, as designated by MassDEP. Zone II areas that intersect the ROW are variable in size. Water suppliers in Zone II locations include local water departments from the Towns of North Reading and Wilmington, and Tewksbury Hospital (see

Table 4-3, below).

Table 4-3: Construction Activities within Wellhead Protection Areas

Location	Map Page	Construction Activity
Tewksbury Hospital	1 – 11	Access Road Improvement, Structure Replacements, Construction Matting, Work Pad Grading
North Reading Water Dept. & Wilmington Water Dept.	22 – 29	Access Road Improvement, Structure Replacements, Construction Matting, Work Pad Grading
Lynnfield Center Water District	43 – 44	Access Road Improvement

4.4.3 Potential Impacts to Water Supply and Wellhead Protection Areas

Please refer to *Section 8* for a detailed description of construction procedures for the activities listed in

Table 4-3. Potential risks to water supplies could occur during construction from the use of hazardous materials and dewatering. Each of these issues is discussed below.

Hazardous materials utilized during construction are primarily limited to field refueling and maintenance operations. When refueling or maintenance is required within a Wellhead Protection Area, construction BMPs and appropriate mitigation measures will be implemented to prevent adverse impacts to the sensitive environmental feature.

Replacement of structures with concrete caisson foundations involves drilling a vertical subsurface shaft, installing the steel reinforcing cage, placing steel anchor bolts, pouring concrete, and backfilling as needed. Bentonite or polymer slurry may be used to support the sides of foundation excavations.⁹ The structure will then be placed on and attached to the anchor bolts. Mud boxes or other appropriate controls will be used to contain the drilling mud and excess soil. These soil materials will be removed regularly from the work site and disposed of properly. With the implementation of these BMPs and the mitigation measures described below, no adverse impacts to water supply are anticipated from the Project.

4.4.4 Mitigation Measures for Water Supply Protection

Overall, the refurbishment of the 339/349 Lines is designed to prevent impacts to surface and groundwater resources. Mitigation measures are designed to protect sensitive environmental resources, including water supply areas. Construction BMPs for work within sensitive features include minimizing soil and vegetation disturbance, erosion and sedimentation control, and post-construction restoration and stabilization.

To prevent impacts from hazardous materials, if refueling and maintenance in the field are necessary, vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features and all reasonable environmental precautions will be taken. A paved area, such as a parking lot or roadway, is preferred to minimize the possibility of spill or release to the environment. Refueling precautions will typically include connecting a safety grounding strap between the fuel tank and the vehicle or equipment being refueled, and frequent checks for fuel spills, drips or seeps during the refueling operation. Vehicles are also equipped with spill kits to provide immediate response action, if needed. If it is not practicable to move equipment to a suitable area, special precautions will be employed to prevent oil or hazardous material release to the environment. These precautions include, but are not limited to, deployment of portable basins or similar secondary containment devices, use of ground covers such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies. If an inadvertent release occurs, NEP will adhere to the State and the Company's Release Notification in Massachusetts (EG-501MA) and Spill Response Procedures and Notifications (EG-502MA) in **Attachment C**.

Where dewatering is necessary during excavations for structures within or adjacent to wetland areas, water will be pumped into appropriate dewatering basins. Where vegetation is absent or where slope

⁹ Polymer based slurries and additives may only be used when approved by NEP, EPA and MassDEP.

prohibits, water will be pumped into a straw bale or silt fence settling basin located in NEP-approved areas outside wetland resource areas. Other dewatering options include pumping into a temporary storage tank or implementation of tremie-pours.¹⁰ The pump intake hose will be suspended above the bottom of the excavation throughout dewatering. The basin and all accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched. Soil erosion and sediment controls will be used to contain excess soils prior to removal of the excess soils from the work sites. At all times, dewatering will be performed in compliance with EG-303.

Where drilling is necessary for the installation of caisson foundations, the mud boxes or similar containment devices used to contain the drilling mud and excess soil will be removed regularly from the work site.

¹⁰ The tremie concrete placement method uses a vertical or nearly vertical pipe, through which concrete is placed by gravity feed below water level.

5 RARE SPECIES

This Section addresses elements of the Scope related to rare species and is organized as follows:

Section 5.1	Background
Section 5.2	NHESP Consultation Since the EENF
Section 5.3	Proposed Impacts in NHESP Priority and Estimated Habitat
Section 5.4	Proposed BMPs for State-Listed Species

5.1 BACKGROUND

According to NHESP, the 339/349 Line ROW contain Priority/Estimated Habitat for twelve (12) state-listed wildlife species, consisting of one (1) mammal, four (4) birds, one (1) amphibian, and six (6) invertebrates. Where intersected by the ROW, NEP regularly maintains these Priority/Estimated habitats per the NHESP-approved OMP Guidelines¹¹ discussed in *Section 3*.

Within the Project area, activities resulting in a permanent impact (and thus submitted for MESA review with NHESP), include tree removals, structure replacements, and access road improvements. Temporary matting of BVW is also required within Rare Species Habitat, but this can be considered part of the routine operation and maintenance activities, covered under the requirements of the OMP. In total, 2.8 acres of permanent impacts are proposed within NHESP habitat, in addition to 6 acres of temporary impacts (covered under the OMP, including routine mowing, placement of construction mats, and vehicle access not requiring road improvements).

5.2 NHESP CONSULTATION SINCE EENF

Section 5 of the EENF provides a chronological summary of the pre-application coordination efforts with NHESP prior to the EENF submittal. Since filing the EENF, NHESP has issued an initial determination for the Project (dated 02/15/23, NHESP file# 22-41435). Based on this determination, it is anticipated that the project can avoid a “Take” of rare species or their habitats, provided that the conditions outlined within the determination (see *Section 5.4* of the SEIR, and **Attachment E**), are followed. Consultation is ongoing to ensure that appropriate avoidance, mitigation, and time-of-year (TOY) restrictions are employed.

5.3 PROPOSED IMPACTS IN NHESP PRIORITY & ESTIMATED HABITAT

The total permanent impacts proposed within NHESP Priority/Estimated Habitat along the Project ROW are approximately 7.4 acres. This is distributed across ~4 miles of the Project, in six distinct ROW segments (six main identified Priority/Estimated habitat polygons). The area permanently altered

¹¹ NEP maintains an annual Operation and Maintenance Plan, reviewed and approved by NHESP. NEP performs all maintenance work in accordance with the Massachusetts Endangered Species Act regulations (321 CMR 10.14(7)), which exempts certain Projects and activities from review that include “routine operation and maintenance are part of an operation and maintenance plan approved by the Division of Fisheries and Wildlife.”

is approximately 4.82% of the total 154 acres of NHESP habitat available on the ROW. The following table summarizes permanent impacts to each protected species per ROW segment.

Table 5-1: Permanent Impacts in NHESP Priority and Estimated Habitat¹

Total Area of PH/EH available within ROW		6,724,793-sf
Within-ROW Impacts	Area of within-ROW PH/EH altered permanently*	323,590-sf
	Within-ROW temporary impacts (matting)	259,478-sf
Off-ROW Impacts	Area of off-ROW PH/EH altered permanently*	45,432-sf
	Off-ROW tree removals (# of trees being removed).	41
	Off-ROW temporary impacts (matting)	220-sf

5.4 PROPOSED BEST MANAGEMENT PRACTICES FOR STATE-LISTED SPECIES

This discussion summarizes the efforts made to avoid and minimize impacts to state-listed species, as well as the proposed commitments to best management practices and construction-phase protection measures. Each outlined work activity pertains specifically to the permanent upgrades to access roads, or to precautions during tree removal activities.

Since the proposed activities are centered around maintenance and refurbishment of existing utility lines in established ROWs, there are no alternatives for relocating the project. A no-build alternative would not serve the Project purpose for continuing reliability of the region's electric system. Therefore, avoidance and minimization must consider access route alternatives within the ROW, and construction methods used.

Section 5.3 of the EENF outlined the Project specific mitigation measures which will be employed during construction within mapped rare species habitats. In addition, the following mitigation measures were requested by NHESP within their determination letter:

General protection measures:

- No work or alteration to the soil, surface, or vegetation shall occur outside of the limits of work shown on the Site Plan unless otherwise approved in writing by the Division.
- Following completion of all Work associated with the Project, ongoing vegetation management and maintenance activities within the ROW within Priority Habitat shall occur in accordance with a Division-approved Yearly Operation Plan and/or Operations and Management Plan, unless otherwise approved by the Division.
- Within thirty (30) days of completion of work the Applicant shall submit a brief written report, including photographs showing previous and final conditions, and demonstrating compliance.

Measures to protect marsh birds:

- Conducting work outside of the breeding season at specified locations.
- Ensuring that wetland matting is installed and removed outside of the breeding season, allowing work to occur throughout the breeding season (at specified locations).

Measures to protect listed amphibian:

- NEP has committed to producing a Protection Plan for the species in question, which will be submitted to NHESP for review prior to the commencement of work.
- Within mapped areas for the amphibian of concern, matting must be placed and removed outside of the period February 1 – April 15, unless otherwise approved by the Division.

Measures to protect the terrestrial invertebrate flagged by NHESP:

- Grading to be limited within specified areas.
- Construction matting to be placed over geotextile fabric in specified areas.
- All matted areas to be inspected post-construction / post matting removal to evaluate if drilling dust/material was deposited in outcropping cracks/crevices during construction. A brief report with photos shall be submitted to the Division within ten (10) days of matting removal.

Please note that coordination with NHESP is ongoing, and these BMPs and conditions may be subject to change. Additional protection measures (outlined in the EENF, but re-iterated here for ease of reference), will include:

Design Considerations:

- Access road improvements within protected amphibian and/or reptile habitat areas will include appropriate contouring and reduced “curb/shoulder” slopes, to facilitate migration across access roads.
- Wetland matting will be placed in a manner that creates passages for amphibians to cross under the matting at regular intervals.
- Sediment and erosion controls will not contain plastic netting.
- Excavations in upland areas mapped for amphibians will be covered at night (or provide escape ramps).
- Excavations in upland areas mapped for amphibians will be surveyed each morning, and any trapped animals will be removed and released in a safe, suitable location.
- Materials stockpiles will be minimized in mapped amphibian habitat, and regularly inspected for sheltering amphibians. Any amphibians observed will be removed and released in a safe, suitable location.

Contractor education & awareness:

- Contractors working in state-listed species habitat will be trained in identification and general life history/behavioral notes.

- If a state-listed species is encountered, contractors will be instructed to notify NEP and the approved wildlife monitor.
- Increased human activity in the vicinity of amphibian and reptile habitat can also lead to increase of potential predator species such as raccoons and skunks. In order to discourage any increase in the predator population, contractors will be required to practice good housekeeping and securely dispose of all food wrappers and waste.
- During the breeding/dispersal seasons for state-listed amphibians, sediment-control barriers located in mapped habitat polygons will be checked daily for trapped individuals. If any amphibians are found, these will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.

Vegetation management:

- Per the OMP, NHESP will provide specific management requirements where cutting is required for maintenance activities in wetland resources areas located within mapped state-listed species habitat.
- Per the OMP, areas dominated by low-growing shrub species (lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet fern, and scrub oak) should be encouraged and restored if disturbance is necessary for maintenance-related activities.
- As practicable, a 50-foot wide minimum, vegetated buffer strip of ROW compatible species will be left undisturbed around the edge of vernal pools in mapped habitat for state-listed amphibians. This will provide habitat for protected amphibian species, and further reduce the risk of surface run-off into sensitive vernal pool habitats.
- Construction mats will be used for all wetland access. This practice retains the root systems and seed stock and facilitates revegetation post-construction.

5.4.1 BMPs:

- Erosion and Sediment Controls will be installed and regularly maintained to protect water quality in wetland resource areas, vernal pools, and other waterbodies. During the breeding/dispersal and active seasons, the barriers deployed in state-listed species habitat will be checked daily for trapped amphibians and reptiles, respectively. If individuals are found, they will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.
- Per the OMP, monofilament encased barriers/controls will not be used in state-listed amphibian habitat. Refer to National Grid EG-303 details AA-22, AA-24, & AA-25. Details also provide guidance for wood chip ramps and overlapping controls to avoid complete barriers to and from breeding pools.
- Construction mats will be used for all wetland access and work areas.
- Dewatering discharge will be pumped into a straw bale or silt fence settling basin to be located in an upland area (preferably well-vegetated whenever practicable).

- Foundation excavations will be covered when left unattended.
- Per the OMP, materials will not be stockpiled in CVPs or wetland resource areas.
- Parking of contractor vehicles will be limited or avoided, when practicable, in specified areas within the ROW.
- Equipment will be monitored regularly for leaks and secondary containment will be used under equipment that will be parked in habitat areas during construction. Refueling will not occur within 100 feet of wetlands or waterways.
- Per the OMP, silt fence placed in state-listed reptile habitat will be removed immediately following site stabilization to prevent barriers to movement.

5.4.2 Restoration Measures:

- Access road improvements within protected amphibian habitat areas will include appropriate contouring and reduced “curb/shoulder” slopes, to facilitate migration across access roads.
- Upon completion of the Project activities, work envelopes for maintenance activities will be restored to existing condition. These areas will be allowed to progressively vegetate with typical regular management.
- Per the OMP, areas dominated by low-growing shrub species should be restored in-kind if disturbance is necessary for maintenance-related activities.
- Native vegetation should be preserved in and adjacent to wetlands whenever practicable. Use of construction mats allows for the preservation of root stock by tamping down existing vegetation. Construction matting within wetlands in Priority/Estimated Habitat (for either protected invertebrate species), will be removed immediately after completion of work, to reduce impacts to emergent vegetation and facilitate revegetation.
- In compliance with the VMP and OMP, vegetation and maintenance activities will continue to be managed regularly in NHESP habitat using restrictions and measures that avoid adverse impacts to protected species.

In compliance with the determination issued by NHESP on 02/15/23, NEP will commit to producing a Protection Plan for the rare amphibian of concern within the ROW. This will be submitted to NHESP prior to work commencing.

As highlighted by NMCOG in the comments received on the EENF (NMCOG-2), phenological changes due to climate change are leading to shifts in some species active seasons. While the OMP agreed between NEP and NHESP does not explicitly address this issue, the window for "sensitive dates" applied by NHESP (for active seasons, breeding seasons, in-water migrations, etc.), is deliberately broad, and should provide adequate coverage for early and late seasonal variation in activity. For the majority of the rare species habitat transected by the Project, BMPs required by the OMP apply year-round (such as habitat avoidance). Where specific BMPs are applied to "sensitive dates" only, any field observations of activity outside of these dates would trigger all applicable BMPs

to avoid direct harm to the species of concern, regardless of whether work was within the "sensitive dates" period or not.

6 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This Section addresses elements in the Scope related to historic and cultural resources.

6.1 BACKGROUND

The EENF (Section 6) presented an overview of the cultural resources assessments made by The Public Archaeology Laboratory, Inc. (“PAL”) within the Project’s area of potential effect (“APE”), including standing historic structures or thematically grouped structures, architectural resources, and buried archaeological sites. PAL submitted a Project information package to the MHC on April 22, 2022, consisting of an initial outreach letter and Project Notification Form, along with a cultural resources due diligence report, archaeological sensitivity assessment, and a technical proposal for an intensive (locational) archaeological survey for the Project. PAL completed the intensive (locational) archaeological survey in 2022 and submitted a report to the MHC, USACE, Massachusetts Department of Conservation and Recreation (DCR), and Native American Tribes on January 11, 2023. Since the EENF was filed, the MHC commented on the intensive archaeological survey report, concurring with PAL’s recommendations.

In January 2023, PAL completed an historic architectural reconnaissance survey and effects assessment to identify and evaluate aboveground historic architectural resources within the Project APE. PAL is preparing a technical report that will summarize the aboveground resource survey fieldwork and will submit the results to the MHC, USACE, and Massachusetts DCR for review and comment.

NEP is preparing an archaeological site avoidance and protection plan to avoid impacts to significant archaeological resources that are identified within the Project impact areas. NEP will continue to consult with the MHC, USACE, Massachusetts DCR, and Native American Tribes to avoid, minimize, or mitigate any adverse effects to significant archaeological resources.

6.2 SECTION 106 AND TRIBAL CONSULTATIONS

Since the EENF, NEP submitted the above-referenced documentation to Native American Tribes for their concurrent review. As referenced in the EENF, on April 22, 2022, NEP notified the THPOs from the Wampanoag Tribe of Gay Head (Aquinnah), Nipmuc Tribe, Mashpee Wampanoag Tribe, and the Narragansett Indian Tribe about the Project to seek input about areas of concern. Cultural Resource Monitors from the Wampanoag Tribe of Gay Head (Aquinnah) conducted on-site visits during the archaeological fieldwork.

6.3 MITIGATION MEASURES FOR ARCHAEOLOGICAL RESOURCES

NEP will continue to coordinate with the MHC and tribes to avoid archaeological and other cultural resources. If this is not practicable, NEP will work with the federal and state agencies and the tribes to develop appropriate strategies to address impacts.

7 CLIMATE CHANGE ADAPTATION AND RESILIENCY

This Section addresses elements of the Scope related to climate change and resiliency. This Section is organized to address the Scope as follows:

- Section 7.1 Massachusetts Climate Change Clearinghouse
- Section 7.2 County-Scale Climate Change Projections
- Section 7.3 Statewide Climate Change Projections
- Section 7.4 Precipitation Resiliency
- Section 7.5 Temperature Resiliency
- Section 7.6 Extreme Weather Resiliency
- Section 7.7 Municipal Vulnerability Preparedness Program

NEP is generally committed to improving the resiliency of its transmission line system to the impacts of climate change. As a stakeholder in the Municipal Vulnerability Preparedness (“MVP”) program, NEP has worked closely with municipalities to strengthen its relationship with local officials and strategize actions to reduce vulnerability.¹² The Project aligns with the goals of the MVP program and MA State Hazard Mitigation and Climate Adaptation Plan (“SHMCAP”) to ensure that NEP continues to provide safe and reliable electricity to its customers.

7.1 MASSACHUSETTS CLIMATE CHANGE CLEARINGHOUSE

The Project design accounts for anticipated mid-century and end-of-century changes to temperature, precipitation, urban and riverine flooding, and extreme weather. The Massachusetts Climate Change Clearinghouse (“MaCCC”) provides access to resources relevant to mitigation, adaptation, and building resiliency to climate change in MA. The MaCCC website (resilientMA.com, referred to herein as [resilientMA](http://resilientMA.com)), provides policymakers, analysts, scientists, planners, businesses, and the public the decision-making tools necessary to identify and evaluate the risks posed by climate change, and to develop strategies and implementation approaches for their community.

Climate data provided on [resilientMA](http://resilientMA.com) provide downscaled climate change projections prepared by the Northeast Climate Science Center (“NECSC”) at the University of Massachusetts-Amherst. Downscaled climate data projections are provided for changes in temperature, precipitation, and sea level rise for the Commonwealth at three geographic scales, and were generated using fourteen climate models run for medium and high Representative Concentration Pathways (“RCPs”) emission scenarios (medium RCP of 4.5 and high RCP of 8.5).¹³ The downscaled, county, and statewide climate change

¹² All Towns transected by the 339/349 Line ROW are designated MVP communities (as of October 1, 2018), and all identified power outages as a vulnerability in their communities.

<https://www.mass.gov/files/documents/2018/10/17/master-list-of-mvp-municipal-status-10-12-18.pdf>

¹³ RCPs refer to a scenario set containing emission, concentration, and land-use trajectories. Medium (RCP 4.5) scenario assume peak emissions around mid-century, which then declines rapidly over the second half of the century, while the highest scenario (RCP 8.5) assumes the continuance of the current emissions trajectory.

projections for temperature and precipitation presented below have been prepared using the guidance data provided by EEA. Counties transected by the 339/349 Line ROW are Middlesex and Essex. Projections are to 2020-2049, 2040-2069 (“Mid-Century”), 2060-2089, and 2080-2097 (“End-of-Century”), relative to a 1971-2000 averaged baseline. Following a preliminary review, basin-scale data were excluded from this Section because they were too similar to allow a meaningful comparison of climate change impacts among basins.

The approximate lifespan of the proposed utility assets (e.g., structures) is 50 years. Therefore, analysis of climate change impacts to the transmission system, as described in the following sections, will primarily focus on Mid-Century projections.

7.2 COUNTY-SCALE CLIMATE CHANGE PROJECTIONS

7.2.1 Essex County

Andover, Lynnfield and Saugus are in Essex County. *Table 7-1* provides downscaled climate change estimates for Essex County based on data sourced from the NECSC Climate Data Grapher on resilientMA.¹⁴ By Mid-Century, annual average temperature and total average annual precipitation are projected to increase by ~5.2°F and 1.5 inches, respectively, relative to an observed 1971-2000 average. Average minimum and maximum temperatures are also projected to increase by ~5.5°F and ~4.8°F, respectively, by Mid-Century.

Heating and cooling degree days are a measure of the heating and cooling needs of buildings based upon daily temperature; they are the relative difference between the average daily temperature and 65°F. In Essex County, the number of heating degree-days (“HDD”), is expected to decrease by ~1405 degree-days, and the number of cooling degree-days (“CDD”), is expected to increase by ~520 degree-days, by Mid-Century. The number of days hitting temperatures >90°F is expected to increase by approximately 20 days per year, while the number of days where temperatures drop below freezing (<32°F) is expected to decrease by approximately 33 days per year. Total annual precipitation amounts are expected to increase by approximately 1.5 inches. Please refer to *Table 7-1* for additional projections beyond the average lifespan of the proposed utility assets (i.e., beyond Mid-Century, 2049-2069).

7.2.2 Middlesex County

Tewksbury, Wilmington, North Reading, Reading, and Wakefield are located along the Project route in Middlesex County. *Table 7-1*, below, provides downscaled climate change estimates for Middlesex County. By Mid-Century, annual average temperature and total average annual precipitation are projected to increase by ~5.5°F and 2.7 inches, respectively, relative to an observed 1971-2000 average. Average minimum and maximum temperatures are also projected to increase by ~5.6°F and ~5.2°F, respectively, by Mid-Century.

¹⁴ Northeast Climate Adaptation Science Center. *Climate Change Grapher*. EEA; accessed on 3/8/23
<http://www.resilientma.org/data/data>

In Middlesex County, the number of HDDs is expected to decrease by 1418 degree-days, and the number of CDDs is expected to increase by 549 degree-days, by Mid-Century. The number of days hitting temperatures >90°F is expected to increase by approximately 25 days per year, while the number of days where temperatures drop below freezing (<32°F) is expected to decrease by approximately 34 days per year. Total annual precipitation amounts are expected to increase by approximately 2.7 inches. Please refer to *Table 7-1* for additional projections beyond the average lifespan of the proposed utility assets (i.e., beyond Mid-Century, 2049-2069).

Table 7-1: Climate Change Projections for Essex and Middlesex Counties

Variable	2020-2049		2049-2069 (Mid-Century)		2060-2089		2080-2097 (End-Century)	
County	E	M	E	M	E	M	E	M
Change in annual max. temperature (°F)	3.54	4.04	4.78	5.18	5.88	6.23	6.58	6.93
Change in annual min. temperature (°F)	4.1	4.21	5.46	5.6	6.84	6.98	7.34	7.46
Change in annual average temperature (°F)	3.84	4.23	5.21	5.52	6.34	6.77	6.94	7.34
Heating degree-days accumulation (HDD)	-1031.25	-1060.61	-1404.87	-1418.00	-1643.46	-1660.95	-1780.85	-1802.43
Cooling degree-days accumulation (CDD)	369.33	382.33	519.56	548.55	680.33	725.36	768.72	813.07
Change in total precipitation per year (in)	0.69	1.67	1.47	2.74	2.05	3.18	2.48	3.57
Days with max. temp. > 90°F	13.21	16.30	20.17	24.47	27.33	32.49	33.10	38.67
Days with max. temp. < 32°F	-23.45	-24.16	-33.11	-33.70	-39.09	-39.72	-45.01	-45.36

7.3 STATEWIDE CLIMATE CHANGE PROJECTIONS

Statewide data are important for considering larger scale climate trends throughout the century. All statewide data and tables were sourced from the NESCS report, *Massachusetts Climate Change Projections*.¹⁵ Unlike county-scale projections, statewide projections provided on resilientMA include ranges and percentages for specific climate change impacts. These basic statistics are presented below to facilitate a broader understanding of climate change impacts. The values listed in *Table 7-2* are the range of the most likely scenarios (10-90th percentile), across 28 different climate projections.

Statewide precipitation is expected to increase by approximately 0.9 – 6 inches by Mid-Century due to climate change. Generally, rainfall is expected to increase during the spring and winter months with more intense downpours leading to inland flooding. Winter precipitation is likely to increase and fall

¹⁵ Northeast Climate Adaptation Science Center, *Massachusetts Climate Change Projections – Statewide and for Major Drainage Basins* (EAA, March 2018), 10.
<http://www.resilientma.org/resources/resource::2152/massachusetts-climate-change-projections-statewide-and-for-major-drainage-basins>

as rain instead of snow. Small decreases in summer precipitation are also projected and will likely lead to more frequent droughts.

The statewide average annual temperature is projected to increase by approximately 2.8 – 6.2 °F) by Mid-Century. Annual HDD is expected to decrease by approximately 773 – 1627 degree-days), and CDD are expected to increase by approximately 261 – 689 degree-days), by Mid-Century. MA is generally experiencing warming trends year-round, with higher rates of warming observed during winter. Please refer to *Table 7-2* for additional data beyond the approximate lifespan of proposed utility assets (i.e., Mid-Century, 2040-2069).

Table 7-2: Climate Change Projections for Massachusetts

Variable	Observed value (1971 - 2000 average)	Change by 2050s	Change by 2090s
Annual average temperature	47.5 °F	Increase by 2.8 - 6.2 °F	Increase by 3.8 - 10.8 °F
Number of days per year with daily Tmax > 90°F	5 days	Increase by 7 - 26 days	Increase by 10 - 63 days
Number of days per year with daily Tmin < 32°F	146 days	Decrease by 19 - 40 days	Decrease by 24 - 64 days
Heating degree-days per year (HDD)	6839 Degree-Day °F	Decrease by 773 - 1627	Decrease by 1033 - 2533
Cooling degree-days per year (CDD)	457 Degree-Day °F	Increase by 261 - 689	Increase by 356 - 1417
Growing degree-days per year (GDD)	2344 Degree-Day °F	Increase by 531 - 1210	Increase by 702 - 2347
Total Precipitation per year	47 inches	Increase by 0.9 - 6 inches	Increase by 1.2 - 7.3 inches
Number of days with precip > 1 in	7 days	Increase by 0 - 3 days	Increase by 1 - 4 days

7.4 PRECIPITATION RESILIENCY

Precipitation is projected to increase at county and statewide scales by Mid-Century. Changes in the hydrological cycle create several challenges to electrical transmission system reliability, specifically infrastructure and access. Flood hazards along the ROW may occur due to localized flooding from extreme precipitation events, or in areas proximate to watercourses and within the floodplain. Utility assets located in areas with high risk of flooding (e.g., wetlands, bank, floodplain), are vulnerable to damage. For example, wooden structures are susceptible to decay when submerged, especially if the structures are already damaged. In addition, wetlands and areas of inundation may shift, or migrate, under climate change. This shift may result in the semi-submersion of assets that were not specifically designed to withstand prolonged periods of inundation.

Flood hazard along the ROW access is expected to increase under climate change. Flooding of access roads and work envelopes, especially in areas of low topographic relief, will restrict access to transmission structures during routine maintenance and emergency events. This may create a safety hazard for utility crews, increase costs associated with traversing flooded areas (e.g., use of construction matting), and reduce the response time of emergency crews during unplanned outages.

The Project addresses the risk of increased precipitation and flooding in several ways. First, the replacement of wooden structures with steel structures will harden infrastructure, making it more resilient to water damage and decay. The installation of structures reinforced with caisson foundations will also increase infrastructure resiliency, particularly in wetland resource areas increasingly susceptible to inundation. Caisson foundations provide improved structure stability, helping to make structures more resilient to changing ground conditions induced by flooding/water level fluctuations. Second, the proposed improvements to ROW access roads and work envelopes will create a safer, more reliable network of travel surfaces that can better withstand flooding. The addition of gravel and, in some locations, widening of road surfaces, will provide greater support for and maneuverability of utility equipment.

The installation of stormwater management features, such as rip-rap at the base of access roads and rip-rap diversions, will allow water to quickly drain during heavy precipitation. Lastly, the refurbishment of the 339/349 Line will reduce the frequency at which future maintenance work and transmission line upgrades are needed. Thus, repeated impacts to wetland resource areas can be avoided. Less disturbance to vegetation and soils will increase infiltration rates and water uptake, as well as reduce the potential of erosion from construction. In addition, by reducing future maintenance needs, the amount and duration of future temporary fill (i.e., construction mats) placed in wetlands will be reduced.

The Project will improve transmission system infrastructure and electric transmission reliability in New England. Reinforcement and refurbishment of existing utility assets provides redundancy in the electrical grid and thereby reduces the risks associated with outages that may occur due to increased precipitation and flooding. The Project seeks to improve the resilience of the transmission system infrastructure by avoiding and minimizing impacts to the floodplain to the greatest extent possible. Proposed structures located within areas of BLSF will be installed within the footprint of the existing structures, using foundations of a similar size, and as such are not expected to restrict flows or cause a change in flood stage or velocity. Given the unpredictable nature of climate change, it is difficult to determine to what extent structure foundations may potentially interact with future flooding and storm scenarios. While it is possible that structure foundations may be exposed to more frequent inundation, as well as more extreme temperature variations with climate change, their construction (concrete caisson foundations), is highly resilient to such impacts. The structure foundations will take up a relatively small volume of potential flood storage and will not significantly worsen flood conditions compared to the existing structures. Access road improvements proposed in BLSF will be graded to maintain existing elevations and will have no impact on the flood storage capacity. The Project will also not exacerbate flooding conditions of adjacent uses and properties.

7.5 TEMPERATURE RESILIENCY

The projected increase in CDD is anticipated to place additional demand on the electrical system during summer months. This demand will likely be compounded by an increase in electrical resistivity associated with hotter temperatures. In other words, heat can directly stress critical electrical infrastructure including transmission lines and substations. The risk of electrical failure and outage is greater as the frequency, intensity, and duration of heat waves increase.

The Project will make the transmission system more resilient to temperature change in several ways. Upgrades to infrastructure, e.g., insulators and conductors, will allow the system to handle greater electrical loads during heat waves. Additionally, the installation of OPGW will improve communication among substations and transmission system assets. Improved communication, combined with upgraded access roads, will reduce the diagnostic and response times needed to address issues and restore power in the event of an unplanned outage. Overall, the Project will improve transmission system infrastructure and electric transmission reliability in New England. Reinforcement and refurbishment of existing utility assets provides redundancy in the electrical grid and reduces the risks associated with outages that may occur due to effects associated with increased temperatures.

7.6 EXTREME WEATHER RESILIENCY

The intensity of extreme weather events, such as hurricanes and tropical storms, is expected to increase under climate change. Hurricanes and tropical storms are fed by evaporated ocean water. As water temperatures rise globally, water is more readily available for evaporation, providing more energy to storm systems. Intense weather events create damaging storm surges and wind speeds, as well as heavy precipitation. Additional hazards associated with hurricanes and tropical storms include coastal erosion, which may further damage critical transmission infrastructure in tidal areas.

The intensity and frequency of severe winter storms is also expected to increase under climate change. Greater ocean temperatures and changing atmospheric conditions provide more evaporative input and favor the development of winter storms in the Northeast. Typical examples of winter storm events include ice storms and Nor'easters. Nor'easters may become more concentrated during the coldest winter months where temperatures are low enough for the formation of snow.

With more frequent and severe storms and weather events, communities along the east coast will be under threat of greater coastal storm surges due to increased precipitation and wind speeds. Storm surge is the rise in water level caused by a severe storm, such as a hurricane or nor'easter. The advancing surge combined with wind and normal tides increases the effective sea level and can create extensive storm damage. When this occurs, normally dry, low-lying coastal land can become inundated.

Extreme weather events increase the likelihood of power outages and infrastructure repairs. They also slow the response time of emergency crews by restricting access and creating unsafe working conditions. As discussed previously, the Project addresses the threat of extreme weather events by hardening infrastructure, improving line clearances (to reduce the risk of trees falling on the lines),

improving the access network used to quickly reach structures, and enhancing communication via OPGW.

7.7 MUNICIPAL VULNERABILITY PREPAREDNESS PROGRAM

The MVP grant program provides support for MA municipalities to plan for climate change and implement priority projects to enhance local resiliency. Grant funding allows communities to conduct vulnerability assessments and develop climate change resiliency plans. Vulnerability assessments include an analysis of climate related hazards, vulnerabilities and strengths, and opportunities to enhance resiliency via action. Communities become certified as an MVP community after completing the MVP program and are eligible for MVP Action grant funding. Communities work closely with MVP certified providers that are trained to provide technical assistance for the development of vulnerability assessments.

NEP has been involved in the MVP program across the state, including in municipalities where the 339/349 Line is located. By working with communities, NEP has developed key strategies for improving the resiliency of its electrical system to the impacts of climate change. All eight communities transected by the 339/349 Line are designated MVP communities. A map of communities participating in the MVP program¹⁶ is displayed in *Figure 7-1*.

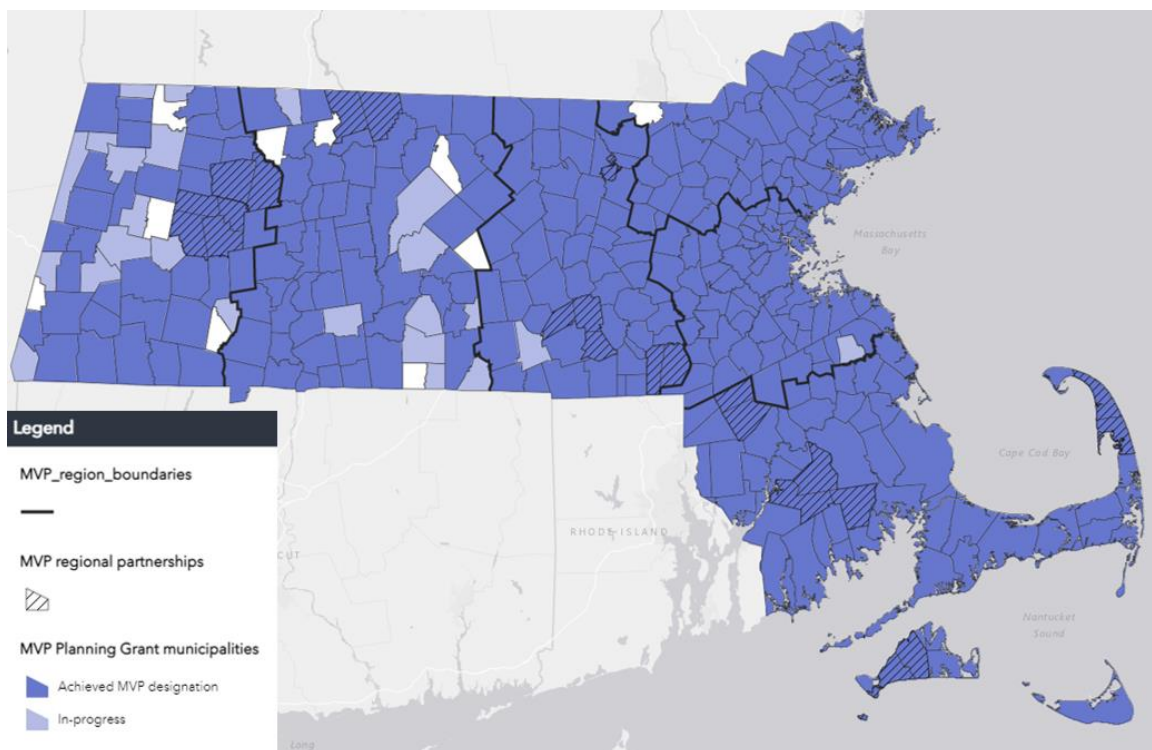


Figure 7-1: Communities Participating in the MVP Program

¹⁶ *Municipal Vulnerability Preparedness Program*, EAA (Accessed 3/16/23). <https://resilientma.mass.gov/mvp/>

8 CONSTRUCTION

This Section addresses elements of the Scope related to construction, transportation, and traffic. The material is presented as follows:

Section 8.1	Introduction
Section 8.2	Construction Phases
Section 8.3	Construction Traffic and Equipment
Section 8.4	Safety and Public Health Considerations
Section 8.5	Solid Waste and Recycling
Section 8.6	Construction and Demolition Air/Noise Pollution
Section 8.7	Invasive Species
Section 8.8	Dewatering
Section 8.9	Concrete Washout
Section 8.10	Construction BMPs

8.1 INTRODUCTION

NEP has established procedures that all employees accessing and performing construction and maintenance activities on distribution and transmission ROWs must follow. These are collectively referred to as BMPs and are discussed in environmental guidance documents such as EG-303 (see **Attachment C**). Consistent implementation ensures that projects are completed in accordance with all applicable environmental laws and regulations as well as company policies and compliance objectives. While many procedures were presented in previous Sections relative to specific parameters (e.g., stormwater, wetlands, and rare species), this Section is intended to provide a comprehensive overview. Project-specific information is integrated into the discussion, where appropriate, but to avoid duplication the reader is encouraged to reference previous Sections of this SEIR for additional detail.

8.2 CONSTRUCTION PHASES

The EENF (*Section 10*) provided information regarding the construction sequences and methodology. Construction is expected to proceed through the following phases:

- Vegetation management;
- Install sediment & erosion controls (where applicable);
- Access road reestablishment/improvement and establishment;
- Matting installation;
- Foundation installation (for caisson supported structures);
- Perform maintenance at existing structures (to be retained);
- Install new structures/structure replacements;
- Remove old structures;
- Install new OPGW along the entire line;
- Restore the ROW (grading, mulching, seeding etc.); and
- Once ROW is fully stabilized, remove sediment and erosion controls.

During each phase of construction within the ROW there is a potential for impacts to the sensitive environmental resources discussed in previous Sections of this SEIR, including wetlands, NHESP habitat, or water supply. These potential impacts are described in *Sections 3 through 6* and largely addressed through the implementation of the BMPs also discussed in those Sections. While the following material provides a narrative for construction methodology, *Section 9* incorporates all the of BMP mitigation measures to be implemented into each appropriate Section 61 findings. The MEPA Plans in **Attachment A** show the location of access routes, work envelopes, and pull pads that will require mowing or other improvements prior to the start of work.

8.2.1 Re-delineate Wetlands and Sensitive Resource Areas

Wetlands in the Project area have been delineated and are shown on the MEPA Plans presented in **Attachment A**. Sensitive resources, *e.g.*, rare species habitat and vernal pool habitat, have also been field-identified. Prior to initiating construction, these resources will be reflagged, as appropriate. The boundaries of wetlands will be clearly marked to prohibit unauthorized vehicular encroachment into wetland areas. NEP will follow requirements imposed by Conservation Commissions in their Orders of Conditions.

8.2.2 ROW Vegetation Management

Vegetative management will be required prior to construction, particularly in work envelopes and along access roads, to facilitate safe equipment passage, to provide safe work sites for personnel within the ROW, and to maintain safe clearances between vegetation and transmission line conductors for reliable operation of the transmission facilities (refer to MEPA Plans in **Attachment A** for locations where vegetation management will be required for access routes and work sites). During construction, general vegetation management practices typically includes mowing and hand-cutting, tree pruning and removal, and wood disposal and management.

Prior to vegetation removal and mowing, the boundaries of wetlands will be clearly marked to prevent unauthorized vehicular encroachment into wetland areas. Existing access routes within the ROW will be used to the extent practicable, and road improvements will be kept to a minimum. The use of temporary construction mats will be required to gain access to and across wetlands, to minimize wetland disturbance, and to provide a stable platform for equipment operation. Construction mats consist of timbers that are bolted together and placed over wetland areas to distribute equipment loads and minimize impacts to the wetland and soil substrates. Construction mat roads placed in wetlands will be removed following the completion of work activities.

Some tree removals are required to provide off-ROW access along an existing (but overgrown), access road, and to re-align a portion of the transmission line. Tree removals will be selective, and “target trees” (those which grow tall enough to interfere with the overhead lines, or which are directly obstructing access to the ROW), may be identified using a combination of aerial imagery and field surveys. Tree removals will be limited to target trees only. Trees will be cut at stump, and root balls left intact, reducing ground disturbance while facilitating the regrowth (via suckering), of some tree species. Understory shrub and herbaceous vegetation will be left intact, as far as possible. Tree removal

techniques will vary with site topography, sensitive resource areas, and accessibility, but may include hand cutting, or the use of feller bunchers or tree handlers. Tree removal techniques will be selected to minimize environmental impacts as far as practicably possible.

Individual tree removals are proposed along the off-ROW access road off Lowell Street in Lynnfield. In total, 41 trees are proposed for removal. All trees are located within upland areas.

Tree removals are also proposed to the SW of the existing 339/349 Line alignment, between structures 91 – 98. Within this area, tall Eastern white pine trees (*Pinus strobus*), have grown along the NE side of the ROW, in an area where NEP does not have easement rights. These trees pose a significant electrical hazard, and as such NEP is proposing to re-locate this short section (~0.6 miles) of the 339/349 Line to the SW, requiring tree removals within a forest fragment between the 339/349 Line and S145/T146 Line ROWs (within NEP's easement). Tree removals within this realignment area will be selective, and will only target tall-growing species which pose a hazard to the lines. Although tree removal will occur within areas of BVW and 100-ft Buffer Zone to BVW, impacts will be minimized as far as practicably possible through the use of BMPs. Obtaining a new easement to remove trees within the upland area to the NE of the ROW, rather than the mixed upland/wetland area to the SW, is infeasible, as this would require an Art.97 land transfer. This would result in substantial project delays and costs, which would put the deteriorated electrical infrastructure at increased risk of failure. In order to perform the entire ACR Project on schedule, and within the limits of existing easements, tree removal to the SW of the lines (within the fragmented strip of forest in between two existing ROWs), is the only viable option.

Special vegetation maintenance methods will be used in wetlands and other environmentally sensitive areas. In certain environmentally sensitive areas such as wetlands, it may be necessary and desirable to leave felled trees and snags and allow them to decompose in place rather than to disturb soft organic substrates. These deadwood features also provide important habitat for many species, from fungi to birds. Where the ROW crosses streams and brooks, vegetation along the stream bank will be selectively cut. Care will be taken to minimize the disturbance of soils and potential for Project-related erosion.

Additional hazard tree removals and/or trimming may also be required along the ROW, but the extent of hazard tree removal has not yet been determined. The routine pruning or removal of hazard/danger trees is part of NEP's VMP and is based on criteria developed by the Federal Energy Regulatory Commission ("FERC"), North American Reliability Corporation ("NERC"), and company requirements for tree worker clearance standards (developed to insure the safety of tree workers).

8.2.3 Soil Erosion and Sedimentation Controls and BMPs

Following the ROW vegetation maintenance activities, proper erosion control devices, such as straw bales and siltation fencing, will be installed in accordance with approved plans and permit requirements (e.g., Orders of Conditions), and overseen by NEP's Construction Supervisor. Weekly inspections to evaluate potential erosion and/or sedimentation issues will be conducted, and inspection reports will be submitted until "final stabilization" has been achieved (i.e., 75% vegetative cover within the disturbed areas) or to documented preconstruction conditions. Photographic documentation will also

be performed. The control devices will provide the dual function of mitigating construction-related erosion and sedimentation, as well as serving as a physical boundary to delineate resource areas and to contain construction activities within approved areas.

Soil erosion and sediment control devices will be installed along the perimeter of identified wetland resource areas prior to the onset of soil disturbance activities to ensure that excess soil piles and other disturbed soil areas are confined and do not result in downslope sedimentation of wetland resources. Low growing shrubs and grasses will be mowed only along access roads and at work envelopes. To avoid disturbing the root mats, stumps will be left in place except at work envelopes, structure locations, and within access roads. Where applicable, orange construction fencing may be installed to delineate soil erosion and sediment controls devices near sensitive resource areas.

Where dewatering is necessary during excavations for structures within or adjacent to wetland areas, water will be pumped into appropriate dewatering basins. At all times, dewatering will be performed in compliance with EG-303. The basin and all accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched. Soil erosion and sediment controls will be used to contain excess soils, prior to removal of the excess soils from the work sites.

Staging areas, equipment storage, and refueling stations will be situated at least 100 feet from wetlands. Where structures requiring concrete foundations are located near wetlands, proper soil erosion and sediment controls will be installed to prevent impacts to these areas, unless equipment, such as a drill rig, cannot be moved.

Construction mats, soil erosion and sediment controls, and other measures will be implemented, as appropriate. Herbaceous vegetation in disturbed areas will be restored using a native wetland or conservation seed mix.

8.2.4 Access Road Reestablishment and Improvements

Access roads along the ROW allow NEP and contractor personnel to construct, inspect, and maintain the existing transmission line facilities. After careful planning and field investigations, NEP has determined that previously used access routes can be utilized for transmission lines, thus avoiding the need for new access roads. In some cases, existing access roads will require maintenance or upgrades to support the proposed construction activities. For example, gravel may be added to provide a stable and level surface for construction vehicles. It may also be necessary to reestablish roads that were used for the installation and maintenance of the existing lines, but which have become overgrown. This includes the removal of 41 trees along off-ROW access roads, to allow the safe passage of specialist utility equipment. It is conservatively assumed that access roads will be maintained after they are improved or reestablished for the Project (except in BVW). NEP's actions and future maintenance of off-ROW access routes will be guided by agreements with individual property owners (refer to MEPA Plans in **Attachment A** for the location of all access roads on the ROW).

As part of NEP's deeded easement rights to the ROW, NEP has the right to *"pass along said strip to and from the adjoining lands and to pass over the Grantor's land to and from said strip as reasonably*

required". This includes allowing NEP to conduct necessary maintenance and improvements to off-ROW access roads, to allow for the access of construction vehicles, and continued operation and maintenance of the easement. Massachusetts follows the Restatement (3rd), which reads: "*Clearing limbs from a roadway, smoothing the surface of a way, placing gravel on a road, or even paving a road have been condoned as reasonable repairs, if necessary for the enjoyment of the easement*" (see for example the case of Glenn vs. Poole, Appeals Court of MA, Essex, 1981). As such, NEP are entitled to continue using the access roads to the ROW, and to conduct necessary improvements to said access roads, with no transfer of interest, change in use, or change in the nature of these easement rights proposed.

In planning for site access, consideration was given to avoiding the use of access roads within or adjacent to environmentally sensitive areas to minimize the potential impacts associated with construction activities. Due to the extensive wetlands located in portions of the ROW, some access across wetland areas and streams could not be avoided. Where upland access is not available, vehicles and equipment will be accommodated by the temporary placement of construction mats. Typically, construction mats consist of timbers or other suitable material bolted together and placed over wetland areas to distribute equipment loads and minimize disturbance to the wetland and soil substrates. However, composite matting may also be used where conditions allow. Temporary construction mats utilized during access will be removed following completion of construction. Vegetation clearing in wetlands is not proposed beyond the footprint of construction mats utilized for access.

Access road construction will be carried out in compliance with the conditions and approvals of the appropriate federal, state, and local regulatory agencies, including the NHESP and MHC. Exposed soils on access roads will be wetted and stabilized, as necessary, to suppress dust generation. Crushed stone aprons will be used at all access road entrances to public roadways to clean the tires of construction vehicles and minimize the migration of soils off-site.

Equipment typically used during the installation and maintenance of access roads will include dump trucks used to transport fill materials to work sites, and bulldozers, excavators, vibratory rollers, backhoes and graders which will be used to place fill materials or make cuts to achieve the proper access road profile. Throughout the Project, pick-up trucks will be used to transport crews and hand-held equipment to work sites. Low-bed trailers will be used to transport tracked and other off-road equipment, which cannot be operated on public roadways to the work site.

8.2.5 Establish Work Envelopes and Staging Areas for Construction

Construction work envelopes, pull pad envelopes, and guard structure work envelopes, will support the equipment needed to complete the structure maintenance and improvements. All work areas are located within the existing maintained ROW, as depicted on the MEPA Plans in **Attachment A**.

Work envelopes are generally required to be 100-ft x 100-ft in area, however, the actual area needed to support equipment will depend on location, as well as site specific conditions. Work space may not exceed what is conservatively shown on the SEIR Plans in **Attachment A**. While grading may be required within some work envelopes to provide a level work surface for construction equipment and

crews in upland areas (as identified on the MEPA Plans in **Attachment A**), the majority of the proposed work areas will require mowing only.

NEP designed the Project to avoid permanent impacts to wetland resource areas to the maximum practicable extent, but since this Project consists of maintenance and improvements to an existing alignment, permanent and temporary impacts could not be avoided. Where impacts to BVW are required for work envelopes, construction mats will be temporarily placed over wetland areas to distribute equipment loads and minimize disturbance to the wetland and soil substrates. Proposed construction mat locations are shown in the MEPA Plans in **Attachment A**. Temporary construction mats will be removed following completion of construction.

Any area identified by NEP’s archaeological consultant as a potentially significant archaeological resource will be avoided if safe/practicable alternatives are available. NEP will conduct investigations for archaeological resources in accordance with a MA State Archaeologist’s permitted plan prior to any site preparation or excavation.

8.2.6 Installation of Foundations and Structures

Equipment typically used during the installation of foundations and the replacement of pole structures includes excavating equipment such as backhoes and excavators, rock drills/augers, and concrete trucks. The H-frame structures will be installed using the “Direct Embed” construction method, and the triple pole structures will be installed using the “Self-Supporting” construction method, also referred to as caisson foundations, described as follows.

Table 8-1: Foundation Installation Methods

Type of Installation	Description
Direct Embed	The installation of a direct embed structure (e.g., tangent or in-line structures) involves the excavation of a hole, the installation of a vertically placed steel culvert (corrugated pipe), placement of the new pole within the culvert, and backfill of the culvert with stone around the pole. The fill needed for these structures is the backfill required within the culvert above existing surrounding grade. Direct embed structures will have 42” culverts: 5.5 sf per pole; 11 square feet per direct embed steel pole H-Frame. Guy wires and anchors will be installed as required by code.
Self-Supporting (Caisson Foundations)	The installation of a self-supporting structure (e.g., angle and dead-end structures) involves drilling a vertical subsurface temporary casing shaft (oversized to fit the permanent casing), followed by the installation of the permanent casing within the temporary, the installation of the steel reinforcing cage (tied rebar), the placement of anchor bolt clusters (to attach the structure to the foundation), pouring of concrete to form the foundation within the permanent casing (also called a caisson foundation), backfilling the void between permanent and temporary casing as the temporary casing is removed, bolting the new structure to the foundation, and final grading around the base of the structure. Assuming the average caisson foundation protrudes approximately 2 feet above surrounding grade, each 8-foot diameter caisson (the larger size, as most caissons proposed along the line are between 6 – 8-ft diameter), would result in approximately 100 cubic feet of fill and approximately 300 cubic feet of fill for a triple pole structure. The area affected is approximately 150 square feet for a triple pole structure (or 50 square feet per pole).

In general, any excavated material will be placed next to the excavation. Steel culvert casings are used to support the sides of excavations. Once the structure has been properly positioned and plumbed within the hole, the excavation will be backfilled with clean three-quarter inch minus gravel and tamped to provide structural integrity. Following the backfilling operation, any remaining excavation spoils will be spread over upland areas or removed from the site.

Hand-held equipment, including shovels and vibratory tampers, are used during the backfilling of foundations and pole structures. Dump trucks are used to remove excess soil from the work site if necessary. Cranes are used to erect structures and bucket trucks or a crane with a basket are used to lift the linemen to the aerial work zone. Tracked equipment that cannot be operated on public roadways will be transported to the work site by means of a low-bed trailer.

8.2.7 OPGW Installation

Following structure upgrades, the OPGW will be replaced following “Tension Stringing Methods” in accordance with Institute of Electrical and Electronics Engineers (“IEEE”) 524 and National Grid Transmission Specifications Document # SP.06.01.301. The wire will be installed in sections varying in length from a single span to two miles or more. The equipment that typically will be used during the conductor and shield wire installation operation includes stringing blocks; a multi-reel rope puller; a single reel hardline puller; a bundle tensioner; conductor reel stands; bulldozers; and cranes.

The wire stringing equipment is used to pull the shield wire through the stringing blocks one phase at a time. First the insulators and stringing blocks will be installed on the structures. Next the ropes (one per phase and shield wire) will then be pulled from structure to structure by either equipment on the ground or with a helicopter. The rope will then be used to pull in the hard line (wire rope) from the puller to the wire reels and the puller will then pull in each shield wire or phase conductor bundle. At no time during installation will the wire be permitted to come into contact with the ground. Once the wire is in place, it will be pulled up to final sag and permanently affixed to the new structures. This process will be repeated for each section of line. During the stringing operation, temporary guard structures or boom trucks with guard attachments will be placed at road and highway crossings, and at crossings of existing utility lines, to ensure public safety and the continued operation of other utility equipment. The location of the temporary guards is shown on the Plans in **Attachment A**.

To minimize disturbance to soils and vegetation, existing access roads will be used to the extent practicable in the placement of wire stringing equipment and materials. The wire reels and other large material items will be transported to and along the ROW using large trucks and tractor trailers. Pickup trucks will be used to transport work crews and small materials to work sites.

8.2.8 Restoration of the ROW

Restoration efforts will be completed following the construction operations. Construction debris will be removed from the Project site and disposed of properly. Disturbed areas around structures and other graded locations will be seeded with an appropriate conservation seed mixture and/or mulched to stabilize the soils in accordance with applicable regulations. Construction work envelopes will be loamed and seeded where necessary, *i.e.*, where grading is proposed. Temporary sedimentation control

devices will be removed following the stabilization of disturbed areas; straw bales, straw wattles, or similar may be removed or left in place after the stakes are pulled and the strings cut. Pre-existing drainage patterns, ditches, roads, walls, and fences will be restored to their former condition. Where requested by property owners, permanent gates and access road blocks may be installed at key locations to inhibit access onto the ROW by unauthorized persons or vehicles. The restored ROW will be monitored until 75% vegetative cover, restoration to documented preconstruction conditions is achieved, or in accordance with applicable agency requirements. Please refer to *Section 4* of this SEIR for details specific to ROW restoration within wetland resource areas.

8.3 CONSTRUCTION TRAFFIC AND EQUIPMENT

8.3.1 Construction Traffic

Construction-related traffic will occur throughout the duration of the Project, estimated to be from – March 2025 through July 2026. Access to the ROW for construction equipment will typically be gained from public roadways, which cross the ROW in various locations along the route, and adjacent existing off-ROW access roads. Because each of the construction tasks will occur at different times and locations over the course of the construction, traffic will be intermittent at these entry roadways. Traffic will consist of various vehicle types ranging from pick-up trucks to heavy construction equipment. At this early stage in Project planning, NEP has not yet assigned crews/contractors or equipment for the Project. As such, the exact number of trucks or other equipment required at any one time/location is currently unknown. NEP will coordinate with MassDOT throughout the permitting and planning stages of the Project to ensure that adequate traffic management plans are in place prior to work commencing.

The Project route will also intersect with the state jurisdictional highway layout at multiple locations, including I-93 in Andover, Route 125 in Wilmington, and Route 128 in Wakefield (see table x for a complete list of all MassDOT jurisdictional road crossings). Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit issued by MassDOT District 4.

Table 8-2: Road crossings under MassDOT jurisdiction

Road Name / Number	Town	Nearest Strs	Activity
I-93	Andover	208 – 207	Wire crossing only
Route 125	Wilmington	53 – 54	Wire crossing and access to ROW from roadway
Route 62	Wilmington	63 – 64	Wire crossing and access to ROW from roadway
Route 28	North Reading	76 – 77	Wire crossing and access to ROW from roadway
Route 195	Wakefield	127 – 128	Wire crossing and access to ROW from ramp

NEP’s contractor will coordinate closely with MassDOT to develop an acceptable TMP for work within state highways. NEP will coordinate with local authorities for work on local streets and roads. At locations where construction equipment will be staged in a public way, the contractor will follow a

pre-approved work zone traffic control plan. Prior to use of off-ROW access roads, permission will be obtained from private land owners.

8.3.2 Construction Equipment

Table 8-3 lists the equipment that is likely to be required during the 339/349 ACR Project. All diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of Project construction will have USEPA-verified (or equivalent) emission control devices, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. In addition, vehicle idling will be minimized in accordance with MA' Anti-idling law, M.G.L. c. 90, § 16A, c. 111, §§ 142A – 142M, and 310 CMR 7.11. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.

Table 8-3: Typical Overhead Transmission Line Construction Equipment

Construction Phase	Typical Equipment/Materials Required
Site Preparation	<ul style="list-style-type: none"> • Pickup and other small trucks. • Flatbed trucks, brush hogs, bulldozers, bucket trucks for tree canopy trimming, wood-chippers. • Erosion and sediment control devices. • Equipment for tree trimming and/or cutting, including chainsaws, feller bunchers, tree handlers.
General Activities	<ul style="list-style-type: none"> • Vehicles to transport personnel. • Side booms, forklifts, and cranes to handle materials. • Trucks to haul sanitary/solid wastes from construction sites. • Pickup trucks for supplies.
Access Roads	<ul style="list-style-type: none"> • Bulldozer or front-end loader. • Excavators. • Dump trucks for hauling crushed stone or gravel. • Vibratory rollers. • Pickup or stake body trucks for culverts, tooling, and personnel.
Structure Upgrades	<ul style="list-style-type: none"> • Trucks to haul out old hardware (roll off dumpsters). • Cranes. • Trucks with welding equipment to cut steel supports or components. • Dump trucks to haul smaller components, gravel, or spoils. • Digging equipment such as back hoes or excavators.
Installation of New Structures	<ul style="list-style-type: none"> • Bulldozer or front-end loader. • All-terrain vehicles (ATVs). • Tracked carrier (marooka) or a Skidder. • Flatbed trucks and tractor trailers for hauling structure components. • Augers. • Excavators and backhoes. • Cranes. • Bucket trucks. • Conductor pulling and tensioning rigs. • Helicopters. • Large-bore foundation drill rigs for caissons foundations. • Concrete trucks. • Pickups and other small trucks.
Restoration	<ul style="list-style-type: none"> • Pickup and other small trucks.

Construction Phase	Typical Equipment/Materials Required
	<ul style="list-style-type: none"> • Excavators and backhoes. • Dump Trucks.

8.4 SAFETY AND PUBLIC HEALTH CONSIDERATIONS

NEP will construct and maintain the facilities for the Project such that the health and safety of the public are protected. This will be accomplished through adherence to all federal, state, and local regulations, and industry standards and guidelines established for protection of the public. Specifically, the Project's improvements will be designed, constructed, and maintained in accordance with the National Electric Standards Committee ("NESC") Standards. The facilities will be designed in accordance with sound engineering practices using established design codes and guides published by, among others, the American Society of Civil Engineers ("ASCE"), the American Concrete Institute ("ACI"), IEEE, and the American National Standards Institute ("ANSI"). Practices which will be used to protect the public during construction will include, but not be limited to, establishing traffic control plans for construction traffic on busy streets to maintain safe driving conditions, restricting public access to potentially hazardous work areas, and use of temporary guard structures at road and electric line crossings to prevent accidental contact with the conductor during installation.

Following construction, all transmission structures will be clearly marked with warning signs to alert the public of potential hazards if climbed or entered. Installation of signs, gates and/or other types of barriers (e.g., large stones) at access points from public roads will notify the public that trespassing on the ROW is prohibited.

8.5 SOLID WASTE AND RECYCLING

Proposed refurbishment activities will generate solid waste, primarily from the removal of wood structures and sediment and erosion controls. Wood and metal will be segregated from other construction debris and recycled; other debris will be disposed of as non-banned construction waste in accordance with waste facility management regulations at 310 CMR 19.017. Where tree removals are proposed, NEP's forestry best practices for disposal will be used in all cases; provided, however, that in cases where NEP has easement/access rights but is not the landowner, NEP will abide by the terms of the easement document or as NEP may be directed by the landowner.

8.6 CONSTRUCTION AND DEMOLITION AIR/NOISE POLLUTION

8.6.1 Air Quality

All demolition and construction work will be performed in accordance with applicable sections of the MassDEP Air Pollution Control Regulations at 310 CMR 7.02 and 310 CMR 7.09. Specific air quality mitigation measures include:

- Use of appropriately designed construction entrances and wheel wash facilities as necessary to prevent off-site migration of soils;
- Mechanical street sweeping of construction areas and surrounding streets and sidewalks;

- Removal of demolition and construction waste in covered or enclosed trailers;
- Wetting of exposed soils and stockpiles to prevent dust generation;
- Minimizing stockpiling of materials on site;
- Turning off construction equipment when not in use and minimizing idling times;
- Minimizing the storage of demolition and construction wastes on site; and
- Minimizing the duration that soils are left exposed.

Many of these measures are intended to minimize potential impacts associated with construction activities that may generate fugitive dust, which will result in localized increases in airborne particulate levels. Fugitive dust emissions from construction activities will depend on such factors as the properties of the emitting surfaces (e.g., moisture content and volume of spoils), meteorological variables, and construction practices employed.

Although fugitive dust may be generated during demolition and construction activities, the distance to off-site receptors makes it unlikely that the migration of dust will result in off-site impacts. Nonetheless, the contractor will implement dust control measures during active demolition and construction that will primarily consist of using wetting agents regularly to control and suppress dust that may come from the structure being demolished or the construction materials. The contractor will comply with the National Emission Standards for Hazardous Pollutants (“NESHAP”) throughout the duration of the Project.

Site preparations involving construction haul roads, soil stockpiles, and vehicles exiting the Project site have the greatest potential to create fugitive dust. As necessary, haul roads will be routinely misted to suppress dust generation. Soil stockpiles can either be covered or vegetated, depending on how long the stockpile will remain. Dust from construction traffic exiting the Project site onto public roads will be controlled with the use of vehicle tracking pads, which remove soil from the tires of construction vehicles. Paved construction entrances will also be routinely swept by street sweepers to remove accumulated soils. At no time will visible soils be permitted on public streets that could result in fugitive dust issues.

NEP will prepare a SWPPP to comply with the EPA’s construction general permit for stormwater discharges. The SWPPP will implement EPA and MassDEP BMPs for controlling and reducing sediments and dust in stormwater discharges.

In addition, NEP will investigate compliance with MassDEP’s Diesel Retrofit Program and the use of ultra-low sulfur diesel in off-road engines. The Diesel Retrofit Program, formerly called the Clear Air Construction Initiative of the Clean Construction Equipment Initiative, originated as an air quality mitigation measure for the Central Artery/Tunnel Project. The program encourages users of diesel construction equipment to install exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines. While MassDEP requires participation in the Diesel Retrofit Program by municipalities applying for funding under the State Revolving Fund for water and wastewater projects, there is no requirement for participation by other project Proponents.

Proper emission controls, use of clean fuels, control of truck and equipment idling times, and conducting operations without affect to neighbors' clean air are NEP priorities. The Company requires the use of ultra-low sulfur diesel fuels exclusively in its diesel-powered construction equipment. Contractors will be directed to retrofit any diesel-powered non-road construction equipment rated 50 horsepower or above to be used for 30 or more days over the course of the Project with EPA-verified (or equivalent) emission control devices (e.g., oxidation catalysts or other comparable technologies).

8.6.2 Noise and Vibration

While intermittent increases in noise levels are expected during demolition and construction activities, NEP is committed to minimizing these impacts. Construction-related noise levels will comply with applicable sections of MassDEP's Air Quality Regulations at *310 CMR 7.10*, and every reasonable effort will be made to minimize noise impacts from construction activities. Noise mitigation measures include:

- Minimizing the amount of work conducted outside of typical construction hours;
- Ensuring that appropriate mufflers are installed and maintained on construction equipment;
- Ensuring appropriate maintenance and lubrication of construction equipment to provide the quietest performance;
- Turning off construction equipment when not in use and minimizing idling times; and
- Mitigating the impact of noisy equipment on sensitive locations by using shielding or buffering distance to the extent practical.

Excavation activities may create noticeable vibrations in the immediate vicinity; however, it is unlikely that these activities will have off-site impacts.

If needed, certain construction practices such as rock hammering may result in some vibrations extending beyond demarcated construction zones. Vibration mitigation measures include:

- Implementation of a proactive system of notification to potentially-affected abutters prior to the start of vibration-causing construction practices;
- Monitoring vibration levels at the limits of construction and, if necessary, beyond the construction zone; and
- Using alternative construction methods that do not produce as much vibration whenever reasonably possible.

8.7 INVASIVE SPECIES

8.7.1 Invasive Species Considerations

Overall, the objective of NEP's wetland invasive species management procedures is to protect the ecological conditions of wetlands within the Project ROW, specifically focusing on minimizing the

potential spread of invasive species within affected wetlands and avoiding the introduction of invasive species to those wetlands in which invasive species are not currently present.¹⁷

Invasive species control is also considered important when construction is proposed because construction-related activities could potentially influence the spread of invasive plant species in wetlands under the following circumstances:

- Vegetation management within wetlands for the construction and subsequent operation and maintenance of the transmission lines.
- Temporary or permanent improvements to existing access roads crossing wetlands.
- The use of temporary access routes across wetlands to facilitate the movement of utility clearing
- The installation of temporary work envelopes in wetlands.
- Drilling or other types of excavation for transmission line structure foundations within wetlands containing invasive plant species (soil disturbance).
- The removal of temporary fills (e.g., access roads, work envelopes) and the restoration of affected wetlands.

NEP may encounter the following common wetland invasive species in the Project area during the Project, shown in *Table 8-4*:

Table 8-4: Common Invasive Species Found in Project Area Wetlands

Common Name	Latin Name
Purple loosestrife	<i>Lythrum salicaria L.</i>
Common reed	<i>Phragmites australis</i>
Multiflora rose	<i>Rosa multiflora</i>
Asiatic bittersweet	<i>Celastrus orbiculatus</i>
Japanese barberry	<i>Berberis thunbergii</i>
Glossy Buckthorn	<i>Frangula alnus</i>
Tatarian honeysuckle	<i>Lonicera tatarica</i>
Autumn olive	<i>Elaeagnus umbellata</i>
Reed canary grass	<i>Phalaris arundinacea L.</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Privet	<i>Ligustrum vulgare</i>
Spurge (leafy)	<i>Euphorbia esula L.</i>

¹⁷ Certain wetlands containing invasive plants extend well beyond the Project ROWs and outside of areas in which any Project activities are proposed. Therefore, attempting to eradicate invasive species from portions of such wetlands within the proposed work areas within the ROWs is unlikely to be successful and is not considered a practical goal of this program.

8.7.2 Invasive Species Management during Project Construction

NEP has developed a set of procedures that will be implemented during the Project to minimize the spread of invasive species in wetlands within the Project ROWs during construction when the above described circumstances are present. The procedures conform to the USACE Northeast District's *"Invasive Species Control Plan ("ISCP") Guidance"*, which can be found online at http://www.nae.usace.army.mil/Regulatory/ISP/ISCP_Guidance.pdf. The procedures include the following measures:

- Pre-construction training of workers so that BMPs are implemented consistently.
- Requiring contractors check that all construction equipment, vehicles, and materials (e.g., equipment mats) be clean and free of excess soil, debris, and vegetation before being mobilized to the Project ROWs.
- Cleaning any equipment working in or traversing a wetland containing invasive plant species prior to relocating to another work site. Cleaning of vehicles and other equipment (including the tracks and tires) will involve removal of visible dirt, debris and vegetation using brooms, shovels, and, if needed, compressed air.
- Use of construction mats or equivalent at wetland crossings so construction vehicles that frequently travel along on-ROW access roads, such as pickups carrying personnel or material delivery trucks, can avoid direct wetland interaction.
- Use of straw, or alternative BMP erosion and sedimentation controls, will be used in and near wetlands.
- Mats used in wetlands containing invasive species will be cleaned prior relocation to other work areas or wetlands. Cleaning of matting will involve dropping mats one on top of another to loosen any sediment and debris. The matting will then be swept to remove loose soil and any plant material.
- Construction equipment and excavated soil material will be contained within the approved limits of work areas within the ROW; these limits of work will be defined on Project plans.
- Soils excavated from wetlands or riparian areas containing a predominance of target invasive plants will be stockpiled separately (to the extent that there is sufficient work space) and contained within staked bales, silt fence or other approved erosion and sedimentation control device to minimize the potential of spreading these soils elsewhere onto the ROW.
- Final restoration of the ROW will be performed in accordance with National Grid's Environmental Guidance Document EG-303.
- NEP field monitors will perform site inspections and oversee the contractors' compliance with applicable federal, state, and local permit conditions, Project plans (e.g., SWPPP), and NEP policies.

8.8 DEWATERING

Dewatering may be necessary during excavations for pole structures within or adjacent to wetland areas. Water trucks or fractionation tanks may be used if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on site. Dewatering discharge water will never be directed into wetlands streams, other sensitive resource areas, catch basins or stormwater devices. Dewatering flow will be controlled so that it does not cause scouring or erosion using a dewatering basin, filter sock, or equivalent. If there is adequate vegetation in upland areas to function as a filter medium, the water will be discharged to the vegetated land surface. Where vegetation is absent or where slope prohibits, water will be pumped into a dewatering basin consisting of a filter bag with straw bale or silt fence perimeter controls in NEP- approved areas outside wetland resource areas. During initial installation of the pump intake hose, any slack in the hose will be removed to reduce the chance of the hose setting on the bottom of the excavation. The hose will be frequently monitored and adjusted so that it does not set on the bottom of the excavation throughout dewatering. Dewatering basins will be constructed on level ground and monitored throughout the dewatering process to prevent water from flowing, unfiltered, over the top of the basin walls. The basin and all accumulated sediment will be removed following dewatering operations and the area will be seeded and mulched. Please refer to EG-303 in **Attachment C** for a more complete description of dewatering procedures and BMPs.

NEP has conducted an initial assessment to determine dewatering locations prior to construction. Dewatering locations are determined based on site specific conditions and proximity to wetland resource areas. Unless restricted by site conditions, dewatering basins will be placed on level ground in vegetated upland areas. The initial assessment of dewatering locations will be refined after coordination with Conservation Commissions during the local permitting process.

8.9 CONCRETE WASHOUT

Concrete washouts will be used to manage concrete waste associated with the installation of caisson foundations for three-pole structures. Concrete and concrete washout water will not be discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts will be located away from wetlands or other sensitive areas. Concrete washout areas will be regularly inspected by an environmental monitor. Please refer to EG-303 in **Attachment C** for a more complete description and detail of concrete washout procedures.

8.10 CONSTRUCTION BEST MANAGEMENT PRACTICES

Construction BMPs involve the uniform application of practices and procedures to be implemented throughout the construction phase of the Project which avoid or minimize impacts to environmental resources. Per existing NEP Policy, an Environmental Field Issue (“EFI”) will be developed the Project. The EFI provides a single, comprehensive document that outlines permit conditions and requirements for the Project. A copy of the EFI is kept on file at the NEP office, at the site trailer and/or site supervisor’s vehicle. The EFI details the scope of the Project, approved access routes, permit deliverables, sensitive areas to be avoided, detailed soil erosion and sedimentation controls,

notifications and expiration dates, a list of Project contacts, training requirements/documentation, a copy of EG-303 (see **Attachment C**), permit application plans, and copies of all permits.

All contractors and environmental monitors will be required to participate in EFI training before beginning work on site. In accordance with a schedule specified in the EFI, regular construction progress meetings will provide the opportunity to reinforce the contractor and crew awareness of these matters. The comprehensive mitigation measures presented in *Table 9-1* incorporates construction BMPs, as appropriate.

9 MITIGATION & SECTION 61 FINDINGS

This Section addresses elements of the Scope related to mitigation and includes draft Section 61 Findings. The material is organized as follows:

Section 9.1	Introduction
Section 9.2	Mitigation Overview
Section 9.3	Compensatory Mitigation
Section 9.4	Mitigation Cost and Responsible Parties
Section 9.5	Section 61 Findings

9.1 INTRODUCTION

Mitigation is a means of offsetting potential adverse effects of human activity on the environment. The development of mitigation measures has become an integral part of the regulatory process and of conservation planning efforts. Most state legislation requiring mitigation measures does not prescribe the specific mitigation activity that must take place, and mitigation can take many forms, including the following:

- Avoiding an impact by not taking an action or redirecting/relocating an action;
- Minimizing an impact by limiting the degree of action taken;
- Restoring, rehabilitating, or repairing the affected environment;
- Preservation and maintenance activities to reduce or eliminate the impacts over time; and/or
- Providing replacement or substitute resources or environments.

NEP is incorporating elements of these approaches in its overall mitigation plan to comprehensively address potential impacts associated with the proposed maintenance and improvements to the 339/349 Line. This Section presents a comprehensive overview of mitigation discussed in *Sections 3 through 6*, including land, stormwater, wetlands, rare species, and historic/archeological resources measures.

MEPA requires state agencies to make findings on environmental damage and mitigation measures - so-called Section 61 Findings - before issuing a state permit for a Project requiring an EIR (*301 CMR 11.07*). The MEPA regulations at *301 CMR 11.07(6)(k)* require that the EIR contain the proposed Section 61 Findings. In accordance with this requirement, NEP's proposed Section 61 Findings for the Project are also presented herein.

9.2 MITIGATION OVERVIEW

As noted throughout this document, NEP has incorporated an approach that avoids and minimizes impacts wherever practicable. For example, the proposed design utilizes existing utility corridors and, whenever practicable, locates replacement pole structures close to existing structures; relocates replacement pole structures such that they span wetland resource areas; clears vegetation only where necessary for safe operation; and utilizes existing/upland roadways for construction purposes.

NEP has also evaluated alternative construction methodologies designed to reduce impacts to environmentally sensitive areas. Specifically, NEP and their consultant team assessed the constructability of the Project to identify ways to minimize impacts from installation of access roads and construction work envelopes. Construction work envelopes have been designed such that permanent changes in substrate and grade are limited to only where required for safety. Likewise, existing access roads are being utilized within the ROW and improvements to existing roads within rare species habitats are limited to 16 feet in width.

Mitigation measures proposed for construction include appropriate BMPs such as erosion control barriers, use of construction mats, minimizing areas of disturbance, and restoration when necessary. The restoration of the ROW will be monitored until final stabilization (at least 75% vegetative cover) has been achieved.

In terms of mitigation during construction, NEP has established BMPs that will be followed by all NEP employees and contractors for accessing sites and performing construction activities on transmission ROWs. These procedures, outlined in *Section 8* and **Attachment C**, ensure that the Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives.

Project impacts are largely associated with work within wetland resource areas and include temporary and permanent impacts that may be mitigated by implementing a variety of measures that comprise a comprehensive mitigation package. Such measures may include restoration of temporarily impacted areas and replication to compensate for permanent impacts. Mitigation will be determined using criteria defined in the 2016 New England District Compensatory Mitigation Guidance and through consultation with the USACE New England District, MassDEP, and local Conservation Commissions.

NEP is committed to developing a mitigation package that addresses potential Project impacts to the greatest practicable extent. NEP anticipates that the final mitigation package will be developed during the federal, state, and local permitting processes outlined in *Section 10*, and that the mitigation package will fully address the concerns and required permit conditions. Proposed mitigation measures will be reviewed by the Conservation Commission in each municipality, MassDEP, NHESP, MHC and the USACE, and ultimately will be incorporated into the permits and Orders of Conditions issued for the Project.

Table 9-1, on the following pages, presents an overview of construction BMPs and Project-specific mitigation measures proposed for the Project. The schedule for implementation is also noted. NEP and their contractors will be responsible for the implementation of all measures noted in the table.

Table 9-1: Mitigation Measures, BMPs and Schedule Matrix

Parameter	Mitigation Measures and BMPs	Construction Phase						
		Vegetation Removal & Mowing	Erosion & Sediment Controls	Access Road Improvement & Maintenance	Remove & Dispose of Structures	Install Foundations & Pole Structures	Wire Replacement	ROW Restoration
General	An Environmental Field Issue (EFI) document will be developed for the Project and used for training contractors and environmental monitors. The EFI is a comprehensive document that outlines permit conditions and requirements for the Project. A copy of the EFI is kept on file at the NEP office, at the site trailer and/or site supervisor’s vehicle.	X	X	X	X	X	X	X
Land and Stormwater	Erosion and sediment controls will be installed and maintained. The SWPPP will be implemented to ensure that BMPs are utilized during construction to address potential impacts. Stormwater management will be accomplished through stabilization and structural control devices, as well as good housekeeping practices.		X	X	X	X	X	X
	Selective tree removals will be conducted in a manner, and using appropriate equipment, so as to minimize impacts to sensitive resource areas and non-target vegetation to the extent practicable.	X						
	Disturbed areas on the site will be stabilized using standard BMPs.	X	X	X	X	X	X	X
	Dust controls will be evaluated and implemented as needed throughout the duration of the Project on all disturbed soils that are subject to surface dust movement and dust blowing.	X	X	X	X	X	X	X
Hazardous Waste	Work will be completed in accordance with EG-303, EG-501, EG-502, and EG-1707 which describe NEP’s procedures for managing hazardous waste and contaminated soils, and NEP’s spill response procedures.	X	X	X	X	X	X	X
	If oil and/or hazardous material are identified during the implementation of this Project, appropriate notifications will be made in accordance with the MCP.	X	X	X	X	X	X	X
	To prevent impacts from hazardous materials, if refueling and maintenance in the field are necessary, vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features and all reasonable environmental precautions will be taken.	X	X	X	X	X	X	X
	A spill prevention and response plan with procedures to be used during construction to minimize the potential for a fuel spill and, if a spill occurs, to control and minimize potential effects.	X	X	X	X	X	X	X
Climate Change Adaptation & Resiliency	Precipitation Resiliency: <ul style="list-style-type: none">Replacement of steel structures and caisson foundations are more resilient, improved access roads will better withstand flood conditions, and future maintenance requirements will be reduced, resulting in less potential of erosion from construction;Improved transmission system infrastructure and electric transmission reliability in New England; andMitigation measures for work within BLSF and wetlands (described below) also facilitate precipitation resiliency.			X		X	X	
	Temperature Resiliency: <ul style="list-style-type: none">Upgrades to infrastructure, e.g., insulators and conductors, will allow the system to handle greater electrical loads during heat waves; andInstallation of OPGW will improve communication among substations and transmission system assets.					X	X	
Wetlands and Waterways	Install, inspect, and maintain temporary soil erosion and sediment controls, and other applicable construction BMPs, around work sites in or near wetlands to minimize the potential for erosion and sedimentation, mark the limits of wetlands, and restrict crew access, as appropriate.		X	X	X	X	X	X
	Limit grading for access roads and structure foundations in resource areas to the amount necessary to provide a safe workspace.			X		X		X
	Install temporary construction matting for access roads across wetlands, where necessary. The type of stabilization measures to be used in wetlands will depend on soil saturation and depth of organic matter.	X	X	X	X	X	X	X
	Restore wetlands, after refurbishment, to pre-construction configurations and contours to the extent practicable. RA will be allowed to return to shrub habitat.							X
	Comply with the conditions of local, state, and federal permit conditions related to wetlands.	X	X	X	X	X	X	X
	Avoid or minimize access through wetlands to the extent practicable. Where access roads must be improved or developed, the roads would be designed, where practical, so as not to interfere with surface water flow or the functions of the wetland.	X		X	X	X	X	X
Wetlands and Waterways (continued)	Refuel construction equipment (apart from equipment that cannot practically be moved) 100 feet or more from a wetland. If refueling must occur within a wetland, temporary containment will be provided.	X	X	X	X	X	X	X

Parameter	Mitigation Measures and BMPs	Construction Phase						
		Vegetation Removal & Mowing	Erosion & Sediment Controls	Access Road Improvement & Maintenance	Remove & Dispose of Structures	Install Foundations & Pole Structures	Wire Replacement	ROW Restoration
Other General Construction BMPs for Wetlands	Store petroleum products over 100 feet from a wetland.	X	X	X	X	X	X	X
	Restore structure work sites in, and temporary access ways through wetlands following the completion of line installation activities.							X
	Prior to moving to other work areas, remove plant matter, soil, or other deleterious material from equipment and construction matting when working at the sites containing invasive species.	X		X		X		X
	All proposed stream crossings with be temporary in nature and will be bridged using construction mats laid to not impact the hydrology or the bed of the stream.	X	X	X	X	X	X	X
	Provide mitigation (e.g., replication) to be determined in consultation with agencies to offset any permanent wetland impacts.							X
	Provide mitigation for permanent flood storage loss due to structure installation and potential grading required for access and construction work envelope.							X
	Limit disturbance for access roads and structure foundations in wetlands to the amount necessary to provide a safe workspace.			X				
	Install temporary timber matting for access roads across wetlands or to establish safe and stable construction work areas/envelopes, where necessary.	X		X	X	X	X	X
	Do not pile cut woody wetland vegetation to block surface water flows or otherwise to adversely affect the integrity of the wetland.	X						
	Avoid or minimize access through wetlands to the extent practicable. Where construction mats must be installed, the mats would be installed, where practical, so as not to interfere with surface water flow or the functions of the wetland.	X		X	X	X	X	X
	Develop a spill prevention and response plan with procedures to be used during construction to minimize the potential for a fuel spill and, if a spill occurs, to control and minimize potential effects.	X	X	X	X	X	X	X
	Attempt to schedule activities located near waterways during low-flow periods, to the extent practicable. Some crossings may have to be installed outside of typical low-flow periods to adhere to Project construction schedules and to conform to any transmission line outage windows that must be coordinated to maintain the reliability of the transmission grid.	X		X				
	Overhead crossings designed to avoid conflicts.						X	
Vernal Pools	Except in areas where access roads and work envelopes must be installed, existing scrub-shrub vegetation within 25 feet of vernal pools will be maintained, consistent with ROW vegetation management requirements.	X						X
	If low-growth (scrub-shrub) vegetation must be removed adjacent to vernal pools, the cut vegetation (“slash”) will be left in place to serve as recruitment for leaf litter and coarse woody debris.	X						
	Soil erosion and sediment controls will be installed and maintained along construction access roads and around work envelopes as necessary to protect water quality and to limit the potential for soil deposition into vernal pools. Sediment built up behind these devices will periodically be removed and placed in upland areas, in a manner that will preclude the potential for subsequent deposition into the pools.		X	X	X	X	X	X
	Where existing on-ROW access roads adjacent to vernal pools must be improved, construction mats or corduroy road will be used if practicable; otherwise, clean materials will be used (e.g., clean riprap, gravel, stone or equivalent and rock fords).			X	X	X	X	X
	To the extent that circuit outage and other construction timing constraints allow, NEP will attempt to schedule vegetation removal and the installation of access roads and work envelopes in and around vernal pool habitats so as not to interfere with amphibian breeding and migration seasons.	X		X				
	Construction activities that must occur in or near CVPs and PVPs will conform to the measures described in <i>Section 8</i> to avoid or minimize the potential for the spread of invasive species to vernal pool habitat.	X	X	X	X	X	X	X
	For Project activities that must occur adjacent to vernal pools during amphibian migration periods, measures will be implemented on a site-specific basis as necessary to facilitate unencumbered amphibian access to and from vernal pools, e.g., placing wood chip ramps at intervals along sediment control fencing, leaving gaps in or staggering the installation of soil erosion and sediment controls, and aligning soil erosion and sediment controls to avoid bifurcating vernal pool habitat.	X	X	X	X	X	X	X
Invasive Species	Identification of the wetlands containing invasive species on Project plans provided to contractors.	X	X	X	X	X	X	X
	Pre-construction training of workers so that BMPs are implemented consistently.							
	Requiring contractors check that all construction equipment, vehicles, and materials (e.g., equipment mats) be clean and free of excess soil, debris, and vegetation before being mobilized to the Project ROWs.	X	X	X		X		X

Parameter	Mitigation Measures and BMPs	Construction Phase						
		Vegetation Removal & Mowing	Erosion & Sediment Controls	Access Road Improvement & Maintenance	Remove & Dispose of Structures	Install Foundations & Pole Structures	Wire Replacement	ROW Restoration
	Construction mats or equivalent (e.g., corduroy roads) will be used in wetlands during clearing operations to minimize spread of invasive species within a wetland by the clearing equipment itself.	X						
	Cleaning any equipment working in or traversing a wetland containing invasive plant species prior to relocating to another work site. Cleaning of vehicles and other equipment (including the tracks and tires) will involve removal of visible dirt, debris and vegetation using brooms, shovels, and, if needed, compressed air.	X		X		X		X
	Use of construction mats at wetland crossings so construction vehicles that frequently travel along on-ROW access roads, such as pickups carrying personnel or material delivery trucks, can avoid direct wetland interaction.	X	X	X	X	X	X	X
	Use of straw, or alternative BMP erosion and sedimentation controls will be used in and near wetlands.		X	X		X		X
	Mats used in wetlands containing invasive species will be cleaned prior relocation to other work areas or wetlands. Cleaning of matting will involve dropping mats one on top of another to loosen any sediment and debris. The matting will then be swept to remove loose soil and any plant material.	X		X				X
	Construction equipment and excavated soil material will be contained within the approved limits of work areas within the ROW; these limits of work will be defined on Project plans.	X	X	X	X	X	X	X
	Soils excavated from wetlands or riparian areas containing a predominance of target invasive plants will be stockpiled separately (to the extent that there is sufficient work space) and contained within staked bales, silt fence or other approved erosion and sedimentation control device to minimize the potential of spreading these soils elsewhere onto the ROW.					X		
	Final restoration of the ROW will be performed in accordance with National Grid’s Environmental Guidance Document EG-303.							X
	NEP field monitors will perform site inspections and oversee the contractors’ compliance with applicable federal, state, and local permit conditions, Project plans (e.g., SWPPP), and NEP policies.	X	X	X	X	X	X	X
Water Supply Protection	Soil and vegetation disturbance will be minimized to the extent practicable.	X	X	X	X	X	X	X
	Erosion and sedimentation controls will be installed and maintained, per the SWPPP		X	X	X	X	X	X
	Post-construction restoration and stabilization will be implemented.							X
	If refueling and maintenance in the field are necessary vehicles and equipment will be brought to an access area greater than 100 feet away from sensitive environmental features and all reasonable environmental precautions will be taken.	X	X	X	X	X	X	X
	Where dewatering is necessary during excavations for structures within or adjacent to wetland areas, water will be pumped into appropriate dewatering basins.					X		
	Where drilling is necessary for the installation of caisson foundations, the mud boxes or similar containment devices used to contain the drilling mud and excess soil will be removed regularly from the work site.					X		
	If an inadvertent release occurs, NEP will adhere to the Company’s Release Notification in Massachusetts (EG-501MA) and Spill Response Procedures and Notifications (EG-502MA) in Attachment C .	X	X	X	X	X	X	X
	A spill prevention and response plan with procedures to be used during construction to minimize the potential for a fuel spill and, if a spill occurs, to control and minimize potential effects.	X	X	X	X	X	X	X
Rare Species Contractor Education and Awareness Construction Timing and Restrictions	Contractors working in state-listed species habitat will be trained in identification and general life history/behavioral notes.	X	X	X	X	X	X	X
	If a state-listed species is encountered, contractors will be instructed to notify NEP and the approved wildlife monitor.	X	X	X	X	X	X	X
	Contractors will be required to practice good housekeeping and securely dispose of all food wrappers and waste to discourage any increase in the predator population.	X	X	X	X	X	X	X
	Earth disturbing activities for road upgrades will not be performed during the active migration period(s),			X				
	For work within protected marsh bird habitat, work must either be conducted outside of the breeding season, or matting must be installed and removed outside of the breeding season, allowing work to be performed during the breeding season (species and location dependent, as provided in NHESP’s initial determination letter). Please note that due to the sensitive nature of rare species data, species specific information has been omitted from this SEIR.	X	X	X	X	X	X	X
Rare Species (Continued)	Per the OMP, any maintenance activities resulting in an open excavation during the active reptile season must be completed or filled in by the end of work day. Alternatively, exclusion fencing can be installed.					X		
	For work proposed within areas mapped for the protected amphibian, matting must be placed and removed outside of the period February 1 – April 15, unless otherwise approved by the Division.	X	X	X				

Parameter	Mitigation Measures and BMPs	Construction Phase						
		Vegetation Removal & Mowing	Erosion & Sediment Controls	Access Road Improvement & Maintenance	Remove & Dispose of Structures	Install Foundations & Pole Structures	Wire Replacement	ROW Restoration
Monitoring & Reporting	For work proposed within areas mapped for the protected beetle, any construction matting shall be placed atop geotextile fabric to minimize intrusion of sediment/spoils into suitable habitat. All matted areas shall be inspected post-construction/post-matting removal to evaluate if drilling dust/material was deposited in outcropping cracks/crevices during construction.	X	X	X				
	Important habitat areas for the protected species will be delineated/identified on the project construction plans provided with the Environmental Field Issue. These features will also be flagged or demarcated in the field.	X	X	X	X	X	X	X
	Within thirty (30) days of completion of work the Applicant shall submit a brief written report, including photographs showing previous and final conditions, and demonstrating compliance.							X
	Following work within rare beetle habitat, a brief report with photos shall be submitted to the Division within ten (10) days of matting removal.							X
Vegetation Management	During the breeding/dispersal seasons for state-listed amphibians, sediment-control barriers located in mapped habitat polygons will be checked daily for trapped individuals. If any amphibians are found, these will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.	X	X	X	X	X	X	X
	Per the OMP, NHESP will provide specific management requirements where cutting is required for maintenance activities in wetland resources areas located within mapped state-listed species habitat.	X	X	X	X	X	X	X
	Per the OMP, areas dominated by low-growing shrub species (lowbush blueberry, huckleberry, sheep laurel, New Jersey tea, sweet fern and scrub oak) should be encouraged and restored if disturbance is necessary for maintenance-related activities.							X
	NHESP mapped habitats within the ROW are subject to the special conditions established in NEP’s VMP.	X						
BMP’s	As practicable, a 50-foot wide minimum, vegetated buffer strip of ROW compatible species will be left undisturbed around the edge of vernal pools in mapped rare species habitat. This will provide habitat for protected species, and further reduce the risk of surface run-off into sensitive vernal pool habitats.	X						
	Construction mats will be used for all wetland access. This practice retains the root systems and seed stock and facilitates revegetation post-construction.	X	X	X	X	X	X	X
	Erosion and Sediment Controls will be installed and regularly maintained to protect water quality in wetland resource areas, vernal pools, and other waterbodies. During the breeding/dispersal and active seasons, the barriers deployed in state-listed species habitat will be checked daily for trapped amphibians and reptiles, respectively. If individuals are found, they will be relocated by an approved wildlife monitor to the closest suitable area that is free from work disturbance.		X	X	X	X	X	X
	Per the OMP, monofilament encased barriers/controls will not be used in state-listed amphibian habitat. Refer to National Grid EG-303 details AA-22, AA-24, & AA-25. Details also provide guidance for wood chip ramps and overlapping controls to avoid complete barriers to and from breeding pools.		X	X	X	X	X	X
	Dewatering discharge will be pumped into a straw bale or silt fence settling basin to be located in an upland area (preferably well-vegetated whenever practicable).					X		
	Foundation excavations will be covered when left unattended.					X		
	Per the OMP, materials will not be stockpiled in CVPs or wetland resource areas.	X	X	X	X	X	X	X
Rare Species (Continued)	Parking of contractor vehicles will be limited or avoided, when practicable, in specified areas within the ROW.	X	X	X	X	X	X	X
	Equipment will be monitored regularly for leaks and secondary containment will be used under equipment that will be parked in habitat areas during construction. Refueling will not occur within 100 feet of wetlands or waterways.	X	X	X	X	X	X	X
	Access road improvements within protected amphibian habitat areas will include appropriate contouring and reduced “curb/shoulder” slopes, to facilitate migration across access roads.			X				
	Upon completion of the Project activities, work envelopes for maintenance activities will be restored to existing condition. These areas will be allowed to progressively vegetate with typical regular management.							X
	Per the OMP, areas dominated by low-growing shrub species should be restored in-kind if disturbance is necessary for maintenance-related activities.							X
	Native vegetation should be preserved in and adjacent to wetlands whenever practicable. Use of construction mats allows for the preservation of root stock by tamping down existing vegetation. Construction matting within wetlands in Priority/Estimated Habitat (for either protected invertebrate species), will be removed immediately after completion of work, to reduce impacts to emergent vegetation and facilitate revegetation.	X	X	X	X	X	X	X
	In compliance with the VMP and OMP, vegetation and maintenance activities will continue to be managed regularly in NHESP habitat using restrictions and measures that avoid adverse impacts to protected species.	X	X	X	X	X	X	X
Specialized Construction and Restoration Measures								

Parameter	Mitigation Measures and BMPs	Construction Phase						
		Vegetation Removal & Mowing	Erosion & Sediment Controls	Access Road Improvement & Maintenance	Remove & Dispose of Structures	Install Foundations & Pole Structures	Wire Replacement	ROW Restoration
Historic Resources	Mitigation will be determined in consultation with MHC, THPOs, DCR, and Advisory Council on Historic Preservation (“ACHP”), as appropriate. If determined to be necessary, data collection activities will occur prior to any construction activities. If the site is to be protected in place, appropriate protective measures will be taken when earth-disturbing construction activities occur in the vicinity.	X	X	X	X	X	X	X
Traffic	Consult with MassDOT to review proposed plans for overhead crossings (including the use of guard structures) and to review plans to access the NEP ROW via state highways; develop a Transportation Management Plan (TMP) to addresses impacts and MassDOT concerns to ensure a safe working environment and safe passage for highway traffic.						X	
Emissions	Diesel-powered non-road construction equipment with engine horsepower ratings of 50 and above to be used for 30 or more days over the course of Project construction will have USEPA-verified (or equivalent) emission control devices, such as oxidation catalysts or other comparable technologies (to the extent that they are commercially available) installed on the exhaust system side of the diesel combustion engine. Vehicle idling will be minimized in accordance with Massachusetts’ Anti-idling law, M.G.L. c. 90, § 16A, c. 111, §§ 142A – 142M, and 310 CMR 7.11. NEP requires the use of ultra-low sulfur diesel fuel in its diesel-powered construction equipment and limits idling time to five minutes except when engine power is necessary for the delivery of materials or to operate accessories to the vehicle such as power lifts.	X	X	X	X	X	X	X
	Dust controls will be evaluated and implemented as needed throughout the duration of the Project on all disturbed soils that are subject to surface dust movement and dust blowing.	X	X	X	X	X	X	X

9.3 COMPENSATORY WETLAND MITIGATION

Compensatory mitigation involves creating or enhancing wetlands to replace or “compensate” for the wetland area or function lost or altered through the Project. Permanent land preservation is also a compensatory mitigation measure. For the Project, the compensatory mitigation may include the following components:

- Preserve land from impacts in perpetuity;
- Participation in the USACE In-Lieu Fee (“ILF”) Program;

9.4 WETLAND MITIGATION COST AND RESPONSIBLE PARTIES

Mitigation costs estimates are presented in *Table 9-2*. These are pre-construction estimates based on available information and experience with other recent projects. In terms of responsibility, NEP and their contractor will be mutually responsible for overseeing the implementation of all required mitigation measures. Please refer to *Table 9-1* for the schedule of the implementation of the mitigation, based on the construction phases of the Project. Wetlands replication, compensatory flood storage and enhancement area plantings will occur post-construction. Land preservation involves a property transfer that could occur at any point during Project permitting or construction.

Table 9-2: Estimated Mitigation Costs

Mitigation Measure	Estimated Mitigation Cost	Responsible Parties	Notes
Environmental Impact Minimization Measures (Includes soil erosion & sedimentation controls, mitigation for wetlands, waterbodies, vernal pools and invasive species controls, and ROW restoration (upland & wetland)).	\$3,400,000	Cost- NEP Implementation- NEP Contractor	Cost estimate is based on \$200,000 per mile.
Construction mats for Access and Work Envelopes	\$2,609,000	Cost- NEP Implementation- NEP Contractor	\$50/linear foot.
Wetlands Replication	\$200,000	Cost- NEP Implementation- NEP Contractor	Cost estimate based on \$10 per square foot of replication.
Total	\$6,209,000		

9.4.1 State Wetland Replication and Restoration/Enhancement

Wetland Restoration and Enhancement

Where permanent alteration of the wetland vegetative community is proposed (as a result of tree removals), but no net loss of wetland will occur. Due to the nature of the Project, it is not possible to allow areas impacted by tree removal to return to forested conditions, as this would be incompatible with the overhead transmission lines. Instead, wetlands subject to selective tree removal will be restored to create scrub-shrub or emergent habitats. During selective tree removals (only trees which pose a hazard to the lines, or which obstruct access roads, will be removed from wetlands), existing understory or ground vegetation will be retained and protected wherever possible. Measures to protect non-target vegetation may include hand cutting of trees, or the use of reaching equipment (such as feller bunchers or tree handlers), to reduce ground disturbance within wetlands. If construction matting is required in order to access wetlands and perform tree removals, matting will be placed on top of understory vegetation, to protect root balls and reduce ground disturbance. Depending on the extent of understory/ground cover vegetation present, wetlands will either be left to naturally re-vegetate (except for trees) or will be stabilized and seeded with an appropriate wetland conservation seed mix.

While tree removals will result in a permanent alteration to the vegetative community of select wetlands, there will be no net loss of wetlands. Furthermore, impacted wetlands will naturally revegetate into transitional forest/shrub/emergent communities, an increasingly uncommon wetland type in Massachusetts, which will help to enhance wetland functional diversity along the ROW. It should also be noted that providing like-for-like wetland replication for tree removals (i.e. replication of forested wetland), would not be possible, even in off-ROW locations where compatibility with transmission lines was not a restriction. Mature trees take far longer to grow than the time available for wetland replication, and restoration within the impacted wetlands (promoting the growth of retained shrub and understory vegetation), will almost certainly achieve a closer proximation of the original wetland conditions than possible in a replication area.

Wetland Replication

For wetlands permanently impacted by fill (resulting in a loss of wetland), wetlands will be replicated at a minimum of 1:1 the area that is being filled, and greater within Towns which specify a higher ratio of wetland replication in their Bylaws (please refer to *Table 9-3*). Contiguous to existing wetlands within the ROW, in an area not likely to be impacted by future maintenance or construction of the line, an upland area will be converted to wetland. Upland will be excavated to grade equal to adjacent wetland, i.e. begins to pool or reach groundwater. Slopes will be graded to approximate natural conditions like adjacent wetland and stabilized with native, facultative vegetation. An appropriate wetland seed mix consisting of native, obligate wetland plants will be applied to newly created wetland areas. Mitigation areas will be monitored for two full growing seasons or until they have reached 75% stabilization with native vegetation. Any invasive species found during regular monitoring will be removed by hand and disposed of properly. Should additional intervention be needed to control invasive species NEP will coordinate with the Conservation Commission to determine appropriate methodologies. Monitoring reports will be developed and submitted to the Conservation Commission

after each growing season that will highlight changes to vegetative community, percentage of plant establishment achieved, invasive species, a photo log and recommended re-plantings if necessary. Should the plantings and wetland seeding not achieve the required 75% yield, a contingency plan will be developed with guidance from the local Conservation Commission and a new timeline will be put in place. At this stage in the permitting process, NEP has not yet confirmed wetland replication areas. NEP will work closely with the Conservation Commission of each municipality to site, design, construct, and manage wetland replication areas. The locations for proposed wetland replication areas will be determined during the local permitting process (submission of NOIs to each municipalities Conservation Commission), at which time all interested parties will have the opportunity to review plans and provide feedback.

Table 9-3: Wetland Replication Requirements by Municipality

Municipality	Wetland Replication Ratio
Andover	1 : 1
Lynnfield	1 : 1
North Reading	1.5 : 1
Reading	2 : 1
Saugus	1 : 1
Tewksbury	1 : 1
Wakefield	1 : 1
Wilmington	1 : 1

9.5 SECTION 61 FINDINGS

The remainder of this Section presents the proposed Section 61 Findings in compliance with *301 CMR 11.07(6)(k)*. These proposed findings incorporate consultations with various state agencies. While NEP will continue to consult with certain agencies concerning mitigation, this SEIR contains the most up-to-date information on the Project's mitigation measures, including those to which NEP has committed to and those under discussions with agencies. Each Section 61 Finding is essentially a stand-alone document, so it does not incorporate previously defined acronyms.

Proposed Section 61 Findings for MassDEP

DRAFT FINDINGS PURSUANT TO G.L. SECTION 30, SECTION 61

Project Name: 339/349 Transmission Line Asset Condition Refurbishment Project

Project Location: Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus.

Project Proponent: New England Power Company (NEP)

EEA Number: 16647

Agency Actions: Massachusetts Department of Environmental Protection Section 401 Water Quality Certification

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in “*accordance with G.L. c.30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment.*” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Section 401 Water Quality Certification sought from the Massachusetts Department of Environmental Protection.

Project Description: The Project includes various general maintenance and system improvement activities for 175 structures along approximately 17.25 miles of transmission line. No new construction is proposed for this Project.

Comprehensive inspections have identified deteriorated wood pole assets, damaged conductors and insulators, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- Work envelope and access road improvements (at select locations, including both within and off-ROW access):
 - Grading.
 - Road widening to a 16-ft standard width.
 - The addition of fresh stone to access roads and work envelopes.
- Vegetation management, including:
 - Mowing of work areas and work envelopes within the ROW.
 - Mowing along access road edges (both within ROW and off-ROW).

- Selective tree removal along the edge of ROW.
- Selective tree removal along the edge of off-ROW access roads.
- More extensive tree removal for line realignment between Structures 91 – 98 in North Reading, Reading and Lynnfield.
- Structure activities, including:
 - Overhead maintenance (replacing equipment and installing new OPGW).
 - Direct embed structure replacements.
 - Caisson foundation structure replacements.
 - Structure removals.

In addition, the existing circuits will be adapted to provide high speed communications between substations. As such, fiber optic ground wire is proposed to replace existing shield wire.

The Project crosses several rivers and streams that are subject to waterways jurisdiction by MassDEP under *G.L. c. 91* and *310 CMR 9.00*. It is anticipated that all Project crossings will require an Order of Conditions from local Conservation Commissions, which will fulfill the requirements of *310 CMR 9.05(3)(g)*.

MEPA History: Pursuant to *G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act (MEPA) and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this SEIR which is subject to MEPA review under Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*). Additionally, the Project requires state permits from the Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the Section 401 Water Quality Certificate include the permanent fill of approximately 20,358-sf of BVW due to structure foundations, as well as the 16.6 acres of BVW temporarily impacted by construction mats, and alteration of ~83,287-sf of forested wetlands to scrub shrub wetlands.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project route to determine access routes and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable. Accordingly, the below-listed commitments are to be carried out by NEP to ensure that all proposed wetlands and waterways mitigation strategies will be implemented as the Project proceeds.

Wetlands & Waterways Mitigation Strategies for the 339/349 Transmission Line Refurbishment Project

Wetland Resource Area	Impact	Mitigation Measures	Responsible Party/ Implementation
Bordering Vegetated Wetlands	Temporary alterations during construction;	Use construction mats for access through wetlands, across streams and other sensitive areas to minimize compression of soils, rutting, and disturbance of vegetation.	Contractor / Construction
	Permanent fill for structure installation;		
	Permanent alteration due to tree removals/forest conversion.	Provide mitigation to be determined in consultation with agencies to offset any permanent wetland impacts. Implement SWPPP.	Contractor / Construction / Potential post-construction monitoring Contractor / Construction
Bordering Land Subject to Flooding	Temporary alteration of floodplain for access and work envelopes.	Restore areas temporarily impacted, as appropriate. Employ temporary erosion controls (e.g., silt fence, straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate.	Contractor / NEP Construction / Potential post-construction monitoring Contractor / Construction
Riverfront Area	Temporary impact to Riverfront Area for access and work envelopes;	Restore areas temporarily impacted.	Contractor/ Construction
	Permanent impacts from new caisson foundation installations.	Employ temporary erosion controls (e.g., silt fence, straw bales, filter socks, mulching, temporary and/or permanent reseeding) and sedimentation controls, as appropriate.	Contractor/ Construction
		Provide mitigation to be determined in consultation with agencies to offset any permanent riverfront area impacts.	Contractor / Construction / Potential post-construction monitoring
Inland Bank	Temporary impact to bank due to access and work envelopes.	Use construction mats to minimize compression of soils, rutting, and disturbance of vegetation.	Contractor / Construction
Waterways	Potential impacts to public waterways from overhead wires.	Overhead crossings designed to avoid conflicts.	NEP / Planning
Vernal Pools	Temporary impacts to vernal pools.	In areas where avoidance is not practicable, NEP will follow BMPs when working in or in close vicinity of vernal pools on the ROW.	Contractor / Construction

DRAFT FINDINGS PURSUANT TO G.L. SECTION 30, SECTION 61

Project Name: 339/349 Transmission Line Asset Condition Refurbishment Project

Project Location: Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus.

Project Proponent: New England Power Company (NEP)

EEA Number: 16647

Agency Actions: Conservation and Management Permit from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under 321 CMR 10.23.

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in “*accordance with G.L. c.30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment*”. The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the Conservation and Management Permit sought from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife under *321 CMR 10.23*.

Project Description: The Project includes various general maintenance and system improvement activities for 175 structures along approximately 17.25 miles of transmission line. No new construction is proposed for this Project.

Comprehensive inspections have identified deteriorated wood pole assets, damaged conductors and insulators, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- Work envelope and access road improvements (at select locations, including both within and off-ROW access):
 - Grading.
 - Road widening to a 16-ft standard width.
 - The addition of fresh stone to access roads and work envelopes.
- Vegetation management, including:

- Mowing of work areas and work envelopes within the ROW.
- Mowing along access road edges (both within ROW and off-ROW).
- Selective tree removal along the edge of ROW.
- Selective tree removal along the edge of off-ROW access roads.
- More extensive tree removal for line realignment between Structures 91 – 98 in North Reading, Reading and Lynnfield.
- Structure activities, including:
 - Overhead maintenance (replacing equipment and installing new OPGW).
 - Direct embed structure replacements.
 - Caisson foundation structure replacements.
 - Structure removals.

In addition, the existing circuits will be adapted to provide high speed communications between substations. As such, fiber optic ground wire is proposed to replace existing shield wire.

Project Impacts: Impacts relative to the Conservation and Management Permit include a potential “take” due to permanent activities (access road upgrades and tree removals), proposed within protected habitat for one state-threatened amphibian species.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable. NEP is working closely with NHESP to develop mitigation measures for each species. NHESP has indicated the proposed mitigation will likely eliminate the need for a take for all but one of the 12 state-listed species present on the Project ROW.

At this time, proposed mitigation includes, but is not limited to, the following:

- Specialized construction measures and commitments to avoid impacts in specific locations;
- Habitat restoration;
- Species specific protection plans;
- Construction windows/Time-of-year restrictions;
- Pre-Construction Surveys;
- Extensive “sweeps” and monitoring during construction; and
- Training for construction personnel.

A detailed mitigation plan will be prepared in conjunction with NHESP during the Massachusetts Endangered Species Act (MESA) Review in Spring 2023.

Findings: After the draft findings herein have been reviewed by Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program, and revised by the Proponent, as appropriate, the Natural Heritage and Endangered Species Program will make a finding that the foregoing information adequately describes the environmental impacts associated with the Project, and that with the implementation of the mitigation measures described above, all practicable means will have been taken to avoid or minimize adverse environmental impacts subject to NHESP authority.

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE

BY

DATE

DRAFT FINDINGS PURSUANT TO G.L. SECTION 30, SECTION 61

Project Name: 339/349 Transmission Line Asset Condition Refurbishment Project

Project Location: Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus.

Project Proponent: New England Power Company (NEP)

EEA Number: 16647

Agency Action: Massachusetts Department of Transportation Permit to Access State Highway

Intent of These Section 61 Findings: MEPA regulations *301 CMR 11.12(5)* stipulate that in “*accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all practicable measures have been taken to avoid or minimize the damage to the environment*”. The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with *G.L. c. 30, §61*. These Findings are limited to the subject matter jurisdiction of the State Highway Access Permit sought from the Massachusetts Department of Transportation (MassDOT).

Project Description: The Project includes various general maintenance and system improvement activities for 175 structures along approximately 17.25 miles of transmission line. No new construction is proposed for this Project.

Comprehensive inspections have identified deteriorated wood pole assets, damaged conductors and insulators, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

- Work envelope and access road improvements (at select locations, including both within and off-ROW access):
 - Grading.
 - Road widening to a 16-ft standard width.
 - The addition of fresh stone to access roads and work envelopes.
- Vegetation management, including:
 - Mowing of work areas and work envelopes within the ROW.
 - Mowing along access road edges (both within ROW and off-ROW).
 - Selective tree removal along the edge of ROW.

- Selective tree removal along the edge of off-ROW access roads.
- More extensive tree removal for line realignment between Structures 91 – 98 in North Reading, Reading and Lynnfield.
- Structure activities, including:
 - Overhead maintenance (replacing equipment and installing new OPGW).
 - Direct embed structure replacements.
 - Caisson foundation structure replacements.
 - Structure removals.

In addition, the existing circuits will be adapted to provide high speed communications between substations. As such, fiber optic ground wire is proposed to replace existing shield wire.

The Project route will intersect with the state jurisdictional highway layout at multiple locations, including I-93 in Andover, Route 125 in Wilmington, and Route 128 in Wakefield. Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit issued by MassDOT District 4.

MEPA History: Pursuant to *G.L. c. 30 §61- §62A-I*, of the Massachusetts Environmental Policy Act (MEPA) and its implementing regulations at *301 CMR 11.00*, the Proponent (NEP) has prepared and submitted this SEIR which is subject to MEPA review under Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (*301 CMR 11.03(3)(a)(1)(a)*). Additionally, the Project requires state permits from the Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: The Project's impacts relative to MassDOT are associated with the installation of new overhead wires across state highways by a non-municipal utility, and construction/improvement of access roads leading from state highways into the ROW. Guard structures, situated on the site of the state roadways in the NEP ROW, may be utilized to ensure safe installation of overhead wires. The installation could temporarily affect traffic flow of the roadway but does not involve permanent physical modifications to the roadway or MassDOT ROW. Access to the NEP ROW from state highways will occur via existing approved access points.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on NEP transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and conducted a constructability review along the Project route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project to provide an accurate impact assessment and to design work to avoid and

minimize impacts within wetlands and other sensitive resources (e.g., cultural resources) to the greatest extent practicable.

MassDOT District 4 will be contacted to discuss specific design information and anticipated Project activities within highway jurisdiction. With MassDOT input, a Traffic Management Plan (TMP) will be developed and submitted for review and approval prior to the start of construction. Enforceable commitments in the TMP will be carried out by NEP to ensure that all proposed traffic mitigation strategies will be implemented as the Project proceeds. Such strategies may include, as appropriate, traffic management procedures; construction time restrictions; signage; installation of track pads to minimize soil in roadways; and/or restoration of vegetation along soft shoulders after construction. All work will occur in accordance with NEP Policy for ROW Access, Maintenance and Construction Best Management Practices.

Findings: After the draft findings herein have been reviewed by Massachusetts Department of Transportation, and revised by the Proponent, as appropriate, the Massachusetts Department of Transportation will make a finding that the foregoing information adequately describes the traffic impacts associated with the Project, and that with the implementation of the mitigation measures described above, all practicable means will have been taken to avoid or minimize adverse environmental impacts subject to Massachusetts Department of Transportation's authority. Appropriate conditions consistent with this Section 61 Finding are included in the State Permit to Access State Highway issued by Massachusetts Department of Transportation to describe more fully and ensure implementation of said measures.

DEPARTMENT OF TRANSPORTATION

BY

DATE

Proposed Section 61 Findings for Department of Conservation and Recreation (DCR)

DRAFT FINDINGS PURSUANT TO G.L. CHAPTER 30, SECTION 61

Project Name: 339/349 Asset Condition Refurbishment Project

Project Location: Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus.

Project Proponent: New England Power Company (“NEP”)

EOEA Number: 16647

Agency Action: Department of Conservation and Recreation Construction Access Permits

Intent of These Section 61 Findings: MEPA regulations 301 CMR 11.12(5) stipulate that in “accordance with G.L. c. 30, §61, any Agency that takes Agency Action on a Project for which the Secretary required an EIR shall determine whether the Project is likely, directly or indirectly, to cause any damage to the environment and make a finding describing the damage to the environment and confirming that all feasible measures have been taken to avoid or minimize the damage to the environment.” The Section 61 Findings are incorporated into the conditions or restrictions to the relevant permit or authorization. The following proposed Section 61 Findings have been prepared by the Project Proponent and are intended to assist the state permit-issuing agency in fulfilling its obligations in accordance with G.L. c. 30, §61. These Findings are limited to the subject matter jurisdiction of the Construction Access Permit sought from the Massachusetts DCR.

Project Description: The Project includes various general maintenance and system improvement activities for 175 structures along approximately 17.25 miles of transmission line. No new construction is proposed for this Project.

Comprehensive inspections have identified deteriorated wood pole assets, damaged conductors and insulators, and lack of safe access for maintenance and emergency needs. From a safety and reliability perspective, and in order to extend asset life, the following activities are proposed:

Work envelope and access road improvements (at select locations, including both within and off-ROW access):

Grading.

Road widening to a 16-ft standard width.

The addition of fresh stone to access roads and work envelopes.

Vegetation management, including:

Mowing of work areas and work envelopes within the ROW.

Mowing along access road edges (both within ROW and off-ROW).

Selective tree removal along the edge of ROW.

Selective tree removal along the edge of off-ROW access roads.

More extensive tree removal for line realignment between Structures 91 – 98 in North Reading, Reading and Lynnfield.

Structure activities, including:

Overhead maintenance (replacing equipment and installing new OPGW).

Direct embed structure replacements.

Caisson foundation structure replacements.

Structure removals.

In addition, the existing circuits will be adapted to provide high speed communications between substations. As such, fiber optic ground wire is proposed to replace existing shield wire.

The Project includes construction activities on DCR properties of the Commonwealth under the care, custody, and control of the DCR under 302 CMR 11.00.

MEPA History: Pursuant to G.L. c. 30, §61- §62A-H, of the Massachusetts Environmental Policy Act (“MEPA”) and its implementing regulations at 301 CMR 11.00, the Proponent (“NEP”) has prepared and submitted this SEIR to MEPA. The Project is subject to MEPA review as it requires one or more state permits and exceeds the following thresholds requiring the filing of an:

- EIR for Wetlands, Waterways and Tidelands because a permit is required, and there is expected to be alteration of one or more acres of bordering vegetated wetlands (301 CMR 11.03(3)(a)(1)(a)).

Additionally, the proposed Project requires state permits from the 401 Water Quality Certification, Natural Heritage and Endangered Species, Department of Conservation and Recreation, Massachusetts Department of Environmental Protection and Massachusetts Department of Transportation.

Project Impacts: Impacts relative to the DCR Construction Access Permits include access road improvements and structure replacements within DCR properties.

Project Mitigation: Mitigation was considered as a matter of course during the planning and design process as an overall approach to avoiding impacts whenever possible. In terms of mitigation during construction, NEP has established procedures that are to be followed by all NEP employees and its contractors for accessing sites and performing construction activities on transmission ROWs. These procedures ensure that this Project will be completed in accordance with all applicable environmental laws and regulations as well as with NEP policies and compliance objectives. NEP completed field investigations and a constructability review along the Project Route to determine access routes, clearing techniques, and construction techniques to be implemented during construction of the Project

to provide an accurate impact assessment and to design work to avoid and minimize impacts within sensitive resources to the greatest extent practicable.

At this time, proposed mitigation may include, but is not limited to, the following:

- Any and all work will be conducted according to the Construction Access Permit terms and conditions, to the satisfaction of the Department.
- All work will be performed in accordance with applicable statutes, regulations, codes or standards.

Findings: After the draft findings herein have been reviewed by DCR, and revised by the Proponent, as appropriate, the DCR will make a finding that the foregoing information adequately describes the environmental impacts associated with the proposed Project, and that with the implementation of the mitigation measures described above, all feasible means will have been taken to avoid or minimize adverse environmental impacts subject to DCR authority.

DEPARTMENT OF CONSERVATION AND RECREATION

BY

DATE

10 REGULATORY COMPLIANCE

This Section addresses elements in the Scope related to Project permitting and regulatory compliance. This Section is organized to address the Secretary's requests as follows:

Section 10.1	Permit Requirements and Status
Section 10.2	Agency Interactions since EENF
Section 10.3	State Regulatory Review
Section 10.4	Federal Regulatory Review

10.1 PERMIT REQUIREMENTS & STATUS

NEP will obtain all environmental approvals and permits required by federal, state, and local agencies for the Project, and the Project will be constructed and operated to comply fully with state and local environmental performance standards. *Table 10-1* notes the filing status of the permits, reviews and approvals required by the Project. A description of the regulatory requirements, and the Project's conformance with each, follows in *Section 10.3*.

Table 10-1: Status of Regulatory Requirements

Agency	Permit/Approval	Status
Federal		
U.S. Army Corps of Engineers (USACE)	Section 404 PCN and consultations under Section 106 of National Historic Preservation Act and Section 7 of the Endangered Species Act	In progress
United States Environmental Protection Agency (EPA)	National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges and Construction Dewatering Activities/Stormwater Pollution Prevention Plan (SWPPP)	To be filed at least 14 days prior to the start of construction
Commonwealth of Massachusetts		
Executive Office of Energy and Environmental Affairs ("EEA")	M.G.L. c. 30 §§ 61-62I, 301 CMR 11.00 Secretary's Certificate	In progress
MassDEP	Section 401 of the federal Clean Water Act ("Water Quality Certificate"); MA Clean Water Act	In progress
MassDEP	Superseding Order of Conditions	Would occur only if a local Order of Conditions is appealed
MassDEP	Section 91 License (310 CMR 9.00) (not required)	MassDEP confirmed in their response to the Project EENF (letter dated 2/12/23), that Project activities will be exempt from Chapter 91 licensing, provided that a final Wetlands OOC is issued for the work.
NHESP/DFW	MA Endangered Species Act – Determination of No Take, provided conditions are followed.	NHESP provided an initial determination of "No Take" for the Project, provided that certain conditions are met (NHESP file# 22-41435, dated 02/15/23).

Agency	Permit/Approval	Status
MHC	Authorization under National Historic Preservation Act of 1966 and M.G.L. c. 9 § 27C	Consultation with MHC is ongoing
MassDOT	Access Permits for Crossing Over of State Highways with Utility Lines	Anticipate filing 3 to 4 months prior to the start of construction
MA DCR	Construction Access Permit	Consultation with DCR is ongoing
Local		
Notice of Intent (NOI) filings with the Conservation Commissions of Tewksbury, Andover, Wilmington, North Reading, Lynnfield, Wakefield & Saugus.	Order of Conditions	Anticipated filing in Fall/Winter 2023
Reading Community Planning and Development Commission (CPDC)	Stormwater Permit	Anticipated filing in Fall/Winter 2023
Wakefield Advisory Board of Public Works	Land Disturbance Permit	Anticipated filing in Fall/Winter 2023
Lynnfield Tree Warden	Tree Permit	Anticipated filing in Fall/Winter 2023

10.2 AGENCY INTERACTIONS SINCE EENF

Table 10-2 summarizes the primary consultations with federal, state and local agencies that have occurred since the EENF was submitted to MEPA. Additional consultations with agencies are ongoing, or will be undertaken, as appropriate. For example, meetings with local Conservation Commissions (or the Commission's agent) are anticipated prior to filings in the municipalities along the route.

Table 10-2: Agency Consultations Since EENF

Agency	Date(s)	Notes
USACE	March 16, 2023	Reviewed Project Scope with USACE
USFWS	March 20, 2023	Reviewed Project Scope with USFWS
MA DCR	April 25, 2023	Historic Architectural Reconnaissance Report from PAL
NHESP	March 16, March 27, and April 27, 2023	Ongoing consultation meetings with NHESP
MHC, DCR, USACE and THPOs	January 11, 2023, February 1, 2023 and February 2, 2023	Intensive Archaeological Survey Report and MHC Comments to USACE and MEPA

10.3 STATE REGULATORY REVIEW

The Project will comply with the performance standards of each state permit or agency action required, as described herein. NEP believes that this information, in conjunction with the implementation of the

mitigation measures described in *Section 9*, will be sufficient for permitting agencies to make informed decisions. As discussed below, all applicable performance standards will be met.

10.3.1 Section 401 Water Quality Certification, MassDEP

The application for a Water Quality Certification review under 314 CMR 9.00 will be filed with MassDEP. MassDEP evaluates applications to determine whether they have incorporated all practicable measures for avoiding and minimizing impacts to wetland resource areas.

The Project's design avoids or minimizes adverse impacts to wetlands, and meets the relevant performance standards, as outlined below:

- 1. No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences (314 CMR 9.06(1)).*

NEP conducted an alternatives analysis for the Project (EENF, Section 2). The analyses sought to identify the best solution for maintaining and improving existing transmission line assets. The alternatives assessment included an evaluation of the No Build Alternative, Targeted Asset Repair Alternative, Structure Design Alternatives, and Realignment Alternatives for the section of line between Structures 91 – 98.

Once the complete list of needs at each structure was identified, NEP and its consultants reviewed the structure locations and subsequently proposed shifts or reconfigurations to some of the work envelopes to avoid wetland resource areas. Wherever feasible, and in accordance with engineering and safety requirements, these shifts were made to avoid or reduce resource area impacts. Although resource area impacts could not be avoided in all cases, several design alternatives were implemented to reduce impacts to the extent practicable.

The next key evaluation criterion of the alternatives analyses was to minimize adverse impacts to environmental resources where impacts could not be avoided. The Project provides the best solution for maintaining and improving existing transmission line assets while avoiding and/or minimizing adverse environmental impacts. In sum, there is no practicable alternative to the Project that would have less adverse impacts on the aquatic environment.

- 2. No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetland (314 CMR 9.06(2)).*

Once the Project alternative was selected, NEP focused its efforts on avoidance and minimization. A complete list of needs at each structure was identified. NEP and its consultants reviewed the structure locations and subsequently proposed shifts or reconfigurations to some of the work envelopes to avoid wetland resource areas. Wherever feasible, and in accordance with engineering and safety requirements, these shifts were made to avoid or reduce resource area impacts. Although resource area impacts could not be avoided in all cases, several design alternatives were implemented to reduce

impacts to the extent practicable. The proposed Project provides the best solution for maintaining and improving existing transmission line assets while avoiding and/or minimizing adverse environmental impacts.

Despite the extensive avoidance and minimization measures described above, construction of the Project will result in some unavoidable impacts to wetlands and water resources within the Project ROW. In all, the Project will permanently impact 10 wetlands (due to fill for structures foundations and/or tree removal activities) and will temporarily impact approximately 71 wetlands (temporary matting for access and work areas).

In total, approximately 20,358-sf of permanent fill will be placed within vegetated wetlands associated with fill for replacement structure foundations. Environmental resource areas temporarily disturbed by construction will be restored in accordance with applicable permit conditions to pre-construction conditions.

The construction, operation, and maintenance of the Project will have a minimal impact on waterbodies (i.e., watercourses, lakes, ponds) and water quality. The proposed activities inherently avoid most direct adverse impacts to such water resources, as described below.

- No replacement transmission line structures will be placed in watercourses, lakes, or ponds.
- Replacement overhead transmission line conductors will span all watercourses, lakes, and ponds.
- Construction equipment access across major rivers will not be required. Project activities across major rivers will be accomplished by working from either side of the watercourse.
- Where temporary access roads and work envelopes are required across intermittent and perennial streams, temporary spans will be used (mats or equivalent).
- Where temporary construction (work) envelopes must unavoidably encompass small watercourses, the work pad design will incorporate site-specific measures designed to maintain flows during the construction period.

3. *No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters, except for the activities specified in 314 CMR 9.06 (3) (a) through (k)...(f) Construction of utilities (314 CMR 9.06(3)).*

The Project will be constructed under 314 CMR 9.06 (3) (c), which allows for the “*Maintenance, repair, replacement or reconstruction but not substantial enlargement of existing and lawfully located structures or facilities including buildings, roads, railways, utilities, dams, and coastal engineering structures*”. Specifically, pole replacements are proposed within the original footprint of fill. No new work is proposed within ORW.

4. *Discharge of dredged or fill material to an Outstanding Resource Water specifically identified in 314 CMR 4.06(1)(d) (e.g., vernal pools, within 400 feet of a water supply reservoir and any other*

areas so designated) is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08 (314 CMR 9.06(4)).

NEP is not anticipating any impacts to any Outstanding Resource Waters (“ORWs”) identified 314 CMR 4.06(1)(d). No ORWs are located within a 1/2-mile radius of the Project.

5. *No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation (314 CMR 9.06(5)).*

No discharge of dredged or fill material is proposed for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Additional stormwater management measures are not proposed as part of this Project.

6. *Except as otherwise provided in 314 CMR 9.06, stormwater discharges shall be provided with best management practices to attenuate pollutants and to provide a setback from the receiving water or wetlands in accordance with the following Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook (314 CMR 9.06(6)).*

Although a small amount of impervious area is proposed as part of this Project, primarily associated with the increase in footprint of select structure foundations, new impervious area will be spread over a large area. Therefore, no additional stormwater management controls are proposed.

During construction, NEP will use soil erosion and sediment control BMPs will be used to minimize and mitigate for permanent and temporary impacts. In addition, proposed mitigation will include restoration of the temporarily affected areas along the transmission line ROWs, and compensation for permanent fill potentially consisting of a mix of wetland restoration, enhancement, and preservation.

NEP’s proposed compensatory mitigation for the Project will consist of:

- Restoring temporary construction impacts to preconstruction conditions;
- Preserving land in perpetuity from impacts; and/or,
- Creating wetlands to satisfy state and local wetland regulations.

BMPs will be utilized during construction as outlined in *Section 8*. Please also refer to **Attachment C** for a depiction of National Grid’s BMPs.

7. *No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth (314 CMR 9.06(7)).*

The Project has been designed to avoid or minimize adverse environmental impacts. For instance, the entire Project will be located within NEP’s existing ROW.

One of NEP's most important goals in the Project design was to avoid and/or minimize adverse impacts on wetlands and water resources. The current design reflects the result of the constructability field reviews and due diligence to take measures to avoid and/or minimize adverse impacts to wetland and waters of the United States. Likewise, the use of existing access roads was maximized to the extent practicable. Where wetland or watercourse crossings are required, temporary construction mats or timber mat bridges (or similar bridging techniques) will be used to reduce adverse impacts. Where impacts to water resources cannot be avoided, appropriate mitigation measures will be provided.

8. *Notwithstanding the provisions of 314 CMR 9.06 (1) through (7), the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth.*

Proposed mitigation for permanent and temporary impacts will include wetland enhancement and replication along the transmission line ROWs, and/or off-ROW compensation, potentially consisting of a mix of wetland restoration, enhancement, and preservation.

After construction is complete, all disturbed upland areas around structures and other graded locations will be dressed with loam, and seeded with an appropriate conservation seed mixture, and/or mulched and allowed to revegetate. Temporary soil erosion and sediment control devices will be removed following stabilization of disturbed areas. Pre-existing drainage patterns, ditches, roads, walls, and fences will generally be restored to their former condition. To the greatest extent practicable, water resources temporarily disturbed by construction will be restored in accordance with applicable permit conditions to pre-construction conditions.

10.3.2 Massachusetts Wetlands Protection Act Order of Conditions, MassDEP

NOI permit applications will be filed with the Tewksbury, Andover, Wilmington, North Reading, Lynnfield, Wakefield, and Saugus Conservation Commissions. The NOIs will provide local Conservation Commissions with details on the proposed work within and proximate to the resource areas of each municipality, the short-term and long-term impacts anticipated to result from that work, and the proposed mitigation to address those impacts. The text below summarizes the Project's compliance with the MA WPA general performance standards for each resource area.

As these communities all have additional local wetlands bylaws and ordinances, the application and hearing process will also address how the Project elements and proposed mitigation measures will conform to appropriate local requirements.

10.3.2.1 Consistency of the Project with the WPA - Limited Project (310 CMR 10.53(3)(d))

The Project is eligible for "limited project" status, as defined in *310 CMR 10.53(3)(d)* for the "construction, reconstruction, operation and maintenance of underground and overhead public utilities." Under the limited project provisions, the Commission or MassDEP may approve a project that does not satisfy the performance standards for the affected resource areas (although no such project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under *310 CMR 10.59*). Thus, limited

projects may, under certain circumstances, be permitted without meeting the performance standards. Nevertheless, NEP's policy is to make all reasonable efforts to meet applicable standards and minimize impacts, and the Project will, in fact, meet the limited project general conditions for 310 CMR 10.53(3)(d), as discussed below.

1. *The issuing authority may require a reasonable alternative route with fewer adverse effects for a local distribution or connecting line not reviewed by the Energy Facilities Siting Council;*

The preferred alternative is consistent with the current use of the existing utility ROW. The above provision is met because the Project represents the alternative that will provide a reliable energy supply for the Commonwealth with a minimum impact on the environment. In the MEPA Certificate, the Secretary allows the Proponent to carry the Project forward in the SEIR.

2. *Best available measures shall be used to minimize adverse effects during construction;*

Throughout design and permitting NEP has made extensive efforts to comprehensively assess constructability and avoid impacts, wherever practicable. Where impacts cannot be avoided, appropriate BMPs will be implemented. These efforts are referenced throughout this document, particularly in Section 9.

3. *The surface vegetation and contours of the area shall be substantially restored; and*

The existing surface vegetation and contours will be maintained or restored to the extent practicable. Tree removal within the ROW is required (in excess of that permissible under the VMP), however, tree removals will be selective, and appropriate measures to minimize disturbance of sensitive resource areas and non-target vegetation will be taken. Vegetation within the ROW will continue to be maintained as scrub-shrub or grassland habitat, and important habitat features will be retained or replicated. Changes to existing contours will be necessary for the replacement of select structures, grading for work envelopes and the creation of compensatory storage areas, but these changes are expected to be minor, and disturbed vegetation will be allowed to regenerate, where appropriate.

4. *All sewer lines shall be constructed to minimize inflow and leakage*

This standard does not apply because no sewer lines are proposed.

10.3.2.2 Inland Bank (310 CMR 10.54)

Bank is defined by 310 CMR 10.54(2)(a) as “the portion of the land surface, which normally abuts and confines a water body”. Performance standards for Bank are noted below, followed by a discussion of how the Project will meet each performance standard.

1. *Where the presumption set forth in 310 CMR 10.54(3) is not overcome, any proposed work on a Bank shall not impair the following:*
 1. *the physical stability of the bank;*
 2. *the water carrying capacity of the bank;*

3. *groundwater and surface water quality;*
4. *the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;*
5. *the capacity of the Bank to provide important wildlife functions. A project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*

Pursuant to 310 CMR 10.54(s), where a proposed activity involves the removing, filling, dredging, or altering of a Bank, the issuing authority shall presume that such area is significant to the interests specified in 310 CMR 10.54(1). This presumption is rebuttable and may be overcome upon a clear showing that the Bank does not play a role in the protection of said interests. Temporary alteration of a small amount of Bank (288-sf), will result from the placement of construction mats across stream banks in construction work areas and along access points. Using construction mats for this purpose will minimize stream bank impacts by avoiding compaction, bank erosion, and loss of vegetation, and will not result in permanent impact to the physical stability of the banks or the water carrying capacity of the existing channels. Any impacted areas will be restored when construction is completed. No permanent impacts to Bank are proposed for this Project.

The Project also will not impact groundwater, surface water, or the capacity of the Banks to provide breeding habitat, escape cover, food for fisheries, or reduce the capacity of the Banks to provide important wildlife habitat functions following completion of the Project. Impacts to Bank will not impair the physical stability of the bank or the ability of the bank to provide the functions described above. For these reasons, the Project satisfies 310 CMR 10.54(4)(a).

2. *Notwithstanding the provisions of 310 CMR 10.54(4)(a), structures may be permitted in or on a Bank when required to prevent flood damage to facilities, buildings and roads constructed prior to the effective date of 310 CMR 10.51 through 10.60 or constructed pursuant to a Notice of Intent filed prior to the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983).*

This standard does not apply because no structures will be located on a Bank.

3. *Notwithstanding the provisions of 310 CMR 10.54(a) or (b), no project may be permitted which will have any adverse effect on specified habitat sites or rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

NEP will continue to coordinate with NHESP pursuant to MESA (M.G.L. c. 131A) and WPA (M.G.L. c. 131, § 40) to avoid impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Based on consultation meetings with NHESP, the Project will likely avoid a “take” for rare species and/or their habitats, provided that certain conditions are met. Please refer to Section 5 for additional details on mitigation proposed in NHESP Priority and Estimated Habitat.

10.3.2.3 Bordering Vegetated Wetland (310 CMR 10.55)

BVW, as defined by 310 CMR 10.55(2)(a) and (c), are “freshwater wetlands that border on creeks, rivers, streams, ponds, and lakes”. Areas within the ROW delineated as BVW are shown on the MEPA Plans in **Attachment A**. Performance standards for BVW are noted below, followed by a discussion of how the Project will satisfy each performance standard.

NEP has designed the Project to avoid wetland impacts to the maximum extent practicable. Nevertheless, some unavoidable permanent wetland impacts will occur as a result of fill for replacement structure foundations in BVW (20,358-sf), and tree removals required for line realignment (83,287-sf). Mitigation for these direct wetland impacts will be provided as described in *Section 9*.

1. *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5,000 square feet of BVW when said area is replaced (in accordance with 310 CMR 10.55(4)(b)).*

Permanent fill for replacement structure foundations will be mitigated with a minimum (1:1) replication area. Please refer to *Section 9* for more detail on the proposed mitigation and wetland replication.

2. *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of a portion of BVW when said portion has a surface area less than 500 square feet; said portion extends in a distinct linear configuration (“finger like”) into adjacent uplands, and; in the judgment of the issuing authority it is not reasonable to scale down, redesign or otherwise change the proposed work so that it could be completed without loss of said wetland.*

This standard is not applicable to the Project. The Project scope does not involve the loss of a “finger like” portion of wetland less than 500 square feet.

3. *Notwithstanding the provisions of 310 CMR 10.55(4)(a), (b) or (c), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59.*

NEP will continue to coordinate with NHESP pursuant to MESA (*M.G.L. c. 131A*) and WPA (*M.G.L. c. 131, § 40*) to avoid impacts to listed species and their habitat, and to provide mitigation for any unavoidable impacts. Based on consultation meetings with NHESP, the Project will likely avoid a “take” for rare species and/or their habitats, provided that certain conditions are met. Please refer to *Section 5* for additional details on mitigation proposed in NHESP Priority and Estimated Habitat.

4. *Any proposed work shall not destroy or otherwise impair any portion of BVW that is within an Area of Critical Environmental Concern designated by the Secretary of Environmental Affairs under M.G.L. c.21A, § 2(7) and 301 CMR 12.00.*

Not Applicable – No portion of the Project is located within an ACEC.

10.3.2.4 Land under Water Bodies and Waterways (310 CMR 10.56)

The Project does not impact Land under Water Bodies and Waterways (“LUW”), defined by 310 CMR 10.56(2)(a), as “the land beneath any creek, river, stream, pond or lake.” Impacts to LUW will be avoided through the use of construction mats designed to span smaller streams during construction. No impacts to LUW are proposed for this Project, and thus this performance standard does not apply.

10.3.2.5 Bordering Land Subject to Flooding (310 CMR 10.57)

BLSF, as defined by 310 CMR 10.57(2)(a), is “an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes”. BLSF and ILSF are present throughout the Project area and shown in the MEPA Plans. Performance standards for BLSF are noted below, followed by a discussion of how that performance standard will be met by the Project.

1. *Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows. Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed Project. Such compensatory volume shall be provided within the same reach of the river, stream or creek (310 CMR 10.57(4)(a)(1)).*

Not Applicable – Activities within BLSF will not result in any loss of flood storage capacity. Work envelopes and access roads will be over-excavated, and structure replacements will not result in a significant increase in fill/change in conditions within BLSF.

2. *Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood storage or velocity (310 CMR 10.57 (4)(a)(2)).*

Not Applicable – Activities within BLSF will not result in any loss of flood storage capacity.

3. *Work in those portions of Bordering Land Subject to Flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987 that (cumulatively) alters(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat as determined by procedures contained in 310 CMR 10.60 (310 CMR 10.57 (4)(a)(3)).*

The proposed work is located in the managed portions of the existing ROW. Therefore, the Project will not impair the capacity of BLSF to provide important wildlife habitat functions.

10.3.2.6 Riverfront Area (310 CMR 10.58(4))

The 200-foot jurisdictional RA pursuant to 310 CMR 10.58(4) for all perennial streams located within the Project area is shown on the MEPA Plans (refer to **Attachment A**). General performance standards for RA are noted below, followed by a discussion of how the Project will meet that performance standard.

- 1. Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area as identified in 310 CMR 10.30 (coastal bank), 10.32 (salt marsh), 10.55 (BVW), and 10.57 (Land Subject to Flooding). When work in riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of G.L. c.131, s. 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within riverfront area (310 CMR 10.58(4)(a)).*

NEP recognizes that maintaining/reestablishing the natural vegetation within the RA is critical to protecting water supplies, providing flood control, preventing pollution and protecting wildlife and fisheries habitat. The Project is within a working ROW that is cleared and maintained in accordance with an approved VMP and local, state, and federal law. The Project will result in temporary disturbance and permanent impacts to portions of RA. Temporary impacts are associated with vegetation mowing activities and vehicle access with no change in substrate or grade. Permanent impacts are associated with structure foundations for replacement structures, grading for work envelopes, and stabilization material in improved/expanded sections of existing access roads. Work envelopes will be loamed and seeded with native grass and herbaceous species following construction to reestablish vegetative cover.

Temporary impacts where unavoidable for installation of linear site-related utilities are allowed within the RA, provided the area is restored to its natural conditions (310 CMR 10.58 (4) (d) 1.a.). Drainage patterns and vegetative cover will generally be retained or re-established within RA following construction.

To offset construction impacts, protective measures and BMPs will be in place to avoid and minimize impacts. The approach for accessing the site, establishing work areas, and performing construction activities is discussed in *Section 8*. No changes to wetland habitat type are anticipated to result from construction activities, and no additional tree clearing is proposed. Therefore, the Project will not result in a significant adverse impact or impairment or reduce the capacity of the RA to provide important wildlife habitat functions.

In summary, the Project meets the performance standards for Bank (no permanent impact), BLSF (no net loss of flood storage capacity), and BVW (restoration and mitigation proposed for temporary and permanent impacts) to the maximum practicable extent.

2. *Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent (310 CMR 10.58(4)(b)).*

At five (5) locations along the Project ROW (one area in Tewksbury, two in Andover, one in Wilmington, and one in Lynnfield), activities within the RA will occur in state-listed species habitat. Impacts have been avoided and minimized to the maximum extent practicable, without compromising the safety of Project construction and future maintenance personnel, and based on an initial determination from NHESP, a “take” of rare species and/or their habitats can likely be avoided, provided that certain conditions are met. An extensive consultation process with NHESP is underway and fully described in *Section 5*.

- 3 *Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed Project with less adverse effects on the interests identified in G.L. c. 131, § 40. 310 CMR 10.58(4)(c)).*

The WPA general performance standards for RA require that the applicant prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the Project with less adverse effects on the interests identified in the WPA. Please refer to the EENF (Section 2) for a discussion of the alternatives evaluation process. The above provision is met because the Project represents the alternative that will provide a reliable energy supply for the Commonwealth with a minimum impact on the environment.

10.3.2.7 Riverfront Area Redevelopment (310 CMR 10.58(5))

The reestablishment and improvement (stabilization) of access roads qualify as a Redevelopment under the WPA and 310 CMR 10.58 (5): As such, “*the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation, or expansion of existing structures, improvement of existing roads....*” Work to redevelop previously developed riverfront areas shall conform to the criteria listed in *CMR 10.58 (5)(a)-(h)*.

Below are the criteria to which work to redevelop previously developed riverfront areas must conform to:

- (a) *At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L.c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58 (4) shall be met.*

The proposed activities are limited to previously disturbed areas of RA and will not result in a diminished capacity of the area to protect the interests of the WPA. To offset construction impacts,

BMPs will be in place to avoid and minimize impacts. Drainage patterns and vegetative cover will generally be retained or re-established within RA following construction.

(b) Stormwater management is provided according to standards established by the Department.

The proposed work will not result in any new point source of discharge. Because the Project will not result in any new point source or stormwater discharge, 301 CMR 10.05(6)((k) through (q)) do not apply to the Project within resource areas or their buffer zones. See in the Matter of Berkshire Community College, Docket No. WET2015-023 (Mass. DEP), Recommended Final Decision (July 29, 2016).

During the construction of the Project, any stormwater runoff that is observed as problematic for runoff and subsequent erosion will be properly managed through the use of BMPs such as the implementation of waterbars, plunge pools, diversion channels, and/or check dams. As part of the Project, clogged or damaged culverts will be repaired or replaced, as necessary.

(c) Within 200-foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25-foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

The proposed activities are limited to the previously disturbed areas of RA and the maintained ROW will not be expanded.

(d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

The proposed activities are limited to the previously disturbed areas of RA and the maintained ROW will not be expanded. Existing structures will be replaced, and no additional new structures are proposed.

(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

The RA is within ROW that is maintained in accordance with applicable standards and procedures. The Project will not result in a significant adverse impact or impairment or reduce the capacity of the RA to provide important wildlife habitat functions. To offset construction impacts, BMPs will be in place to avoid and minimize impacts. Drainage patterns and vegetative cover will generally be retained or re-established within RA following construction.

(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas

immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:

- 1. Removal of all debris, but retaining any trees or other mature vegetation;*
- 2. Grading to a topography which reduces runoff and increases infiltration;*
- 3. Coverage by topsoil at a depth consistent with natural conditions at the site; and*
- 4. Seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site.*

NEP will remove all construction-related debris, re-grade and restore disturbed RA areas as necessary and stabilize all disturbed areas with a conservation seed mix and straw. RA restoration is not proposed.

(g) When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 through 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Energy and Environmental Affairs.

RA mitigation is not proposed. The ROW will continue to be maintained in its existing condition after the Project.

(h) The issuing authority shall include a continuing condition in the Certificate of Compliance for projects under 310 CMR 10.58(5)(f) or (g) prohibiting further alteration within the restoration or mitigation area, except as may be required to maintain the area in its restored or mitigated condition. Prior to requesting the issuance of the Certificate of Compliance, the applicant shall demonstrate the restoration or mitigation has been successfully completed for at least two growing seasons.

RA mitigation is not proposed. Mowing activities within existing maintained ROW will result in temporary impacts to wildlife use and habitat within the RA. These areas will be allowed to revegetate back to their existing conditions, and the ROW will continue to be maintained in its existing condition after the Project.

10.3.2.8 Massachusetts Stormwater Standards

MassDEP applies the MA Stormwater Management Standards (the “Standards”) pursuant to the Wetlands Regulations (*310 CMR 10.00*) and the Water Quality Regulations (*314 CMR 9.00*) relating to stormwater. The Standards define 10 performance stormwater management standards for development and redevelopment projects. No portions of the Project are subject to the Standards and only minimal impervious surfaces are proposed. As noted above, the Project will not result in any new point source of discharge.

During the construction of the Project, any stormwater that is observed as problematic for runoff and subsequent erosion will be properly managed through the use of BMPs such as the implementation of waterbars, plunge pools, diversion channels, and/or check dams. As part of the Project, clogged or damaged culverts will be repaired or replaced, as necessary.

10.3.3 NHESP Conservation and Management Permit

Permanent impacts to mapped NHESP rare species habitat include tree removals, structure replacements, and access road improvements. Temporary matting of BVW is also required within Rare Species Habitat. Since filing the EENF, NHESP has issued an initial determination for the Project (dated 02/15/23, NHESP file# 22-41435). Based on this determination, it is anticipated that the project can avoid a “Take” of rare species or their habitats, provided that the conditions outlined within the determination (see *Section 5.4* of the SEIR, and **Attachment E**), are followed. Consultation is ongoing to ensure that appropriate avoidance, mitigation, and time-of-year (TOY) restrictions are employed. Please refer to *Section 5* for additional details on mitigation proposed within NHESP Priority and Estimated Habitat.

10.3.4 MassDOT Access Permits for Crossing Over of State Roads with Utility Lines

NEP will obtain a MassDOT Permit to Access State Highway/Non-Municipal Utility Permits for crossing over of state roads with utility lines for the Project. The Project’s impacts relative to MassDOT are associated with the installation of a new overhead wire (the OPGW) across state roadways by a non-municipal utility, and construction/improvement of access roads leading from state highways into the ROW. Line installation could temporarily affect traffic flow of the roadway but does not involve physical modifications to the roadway or roadway ROW. Typical performance standards associated with the MassDOT permit include notification 48 hours prior to the beginning of work; submission of MassDOT's standard work notification form; compliance with MassDOT's requirements regarding traffic delays; and the use of police details as specified on the traffic management plans and required by MassDOT. The day of the week and time of day that the work will be performed could vary based on the roadway classification and historical traffic volumes. NEP will prepare and submit a TMP to MassDOT for its review and approval. The Project will comply fully with the performance standards specified in the permit to ensure a safe environment for traffic flow and construction crews in and around the roadways. No long-term roadway impacts are anticipated.

Along its length, the ROW crosses the following MassDOT roadways:

Table 10-3: MassDOT Roadways within the Project Corridor

Road Name / Number	Town	Nearest Strs	Activity
I-93	Andover	208 – 207	Wire crossing only
Route 125	Wilmington	53 – 54	Wire crossing and access to ROW from roadway
Route 62	Wilmington	63 – 64	Wire crossing and access to ROW from roadway
Route 28	North Reading	76 – 77	Wire crossing and access to ROW from roadway
Route 195	Wakefield	127 – 128	Wire crossing and access to ROW from ramp

10.3.5 MHC Project Review & Section 106 Consultation

The Project, which will involve earth-disturbing activities, requires a 404 Permit from the USACE and is subject to Section 106 of the National Historic Preservation Act of 1966. The Project is also subject to review by the MHC in accordance with *M.G.L. c. 9, § 26-27C* and the regulations that guide MHC review of state funded, licensed, or permitted projects (*950 CMR 71*). These regulations set up a process similar to the federal “Section 106” regulations. When a federal permit is required, the issuing agency becomes the designated “lead agency” responsible for coordination of the Section 106 process. The USACE is the lead agency for the Project and is coordinating MHC and other consulting parties in accordance with federal regulations (*33 CFR 325 Attachment C and 36 CFR Part 800*), as further described in *Section 6*.

As appropriate, based on input from MHC, the USACE, tribal representatives, and PAL, recommendations for measures to avoid and minimize impacts to archaeological resources will be developed and followed. To the extent there are unavoidable impacts, NEP will work with these agencies and entities to develop appropriate strategies to address impacts. In the unlikely event that additional cultural resources are discovered or otherwise identified during construction, NEP will follow the applicable permit requirements to notify the USACE, MHC and relevant consulting parties and address the resources.

10.3.6 Section 91 License, MassDEP

The Project crosses several rivers and streams that are subject to Waterways licensing jurisdiction by MassDEP under MA General Law Section 91 and the Waterways Regulations, *310 CMR 9.00*. NEP has consulted with MassDEP on the applicable Section 91 requirements, and MassDEP has confirmed that all activities will be exempt from Chapter 91 licensing provided that a final Wetlands Order of Conditions is issued for the said work under *M.G.L. Chapter 131, § 40* and *310 CMR 10.00*.

10.3.7 Easements and Article 97 Land Disposition

The Project will be entirely located within NEP’s existing transmission line ROWs, where utility easement rights have been long established. These existing ROWs encompass easements on privately-held lands, as well as on properties owned by state and local governments (e.g., public road ROWs). In addition, portions of the ROW will extend across land owned in fee by NEP. The ROW is adequate

to accommodate the proposed maintenance and refurbishment activities with no additional permanent ROW easements required. Therefore, all work is within the scope of NEP's easement rights. Article 97 lands crossed by the ROW are presented in *Table 10-4*, below.

Table 10-4: Article 97 Lands Crossed by the Existing Project ROW

Open Space & Recreation Resources		
Town	Site Name	Owner
Tewksbury	Point Lewis Land	Town of Tewksbury
Tewksbury	Indian Ridge Conservation Area	Town of Tewksbury
Tewksbury	Tewksbury State Hospital	Commonwealth of Massachusetts
Tewksbury	Bradford Road Conservation Area	Town of Tewksbury
Andover	South Street Conservation Area	Andover Village Improvement Society
Wilmington	Wellfield	Town of Wilmington
Wilmington	Pumping Station	Town of Wilmington
North Reading	Cedar Swamp Conservation Area	Town of North Reading
North Reading	Martins Brook Conservation Area	Town of North Reading
North Reading	Chestnut Street Conservation Area	Town of North Reading
Reading	Cedar Swamp	Town of Reading
Lynnfield	Partridge Lane Conservation Area	Town of Lynnfield
Wakefield	Montrose Avenue CR	New England Power Company
Wakefield	Reedy Meadow Conservation Area	Town of Wakefield
Wakefield	Breakheart Reservation	DCR - Division of State Parks and Recreation
Wakefield	Reedy Meadow	Town of Wakefield
Saugus	Breakheart Reservation	DCR - Division of State Parks and Recreation

10.3.8 Public Utility Standards (220 CMR 125.00)

The Project has been designed in accordance with all applicable standards set by the MA DPU and other applicable regulatory agencies that govern the required design criteria for transmission line installation and maintenance. Specifically, the Project was designed in accordance with *220 CMR 125.00 Installation and Maintenance of Electric Transmission Lines*, which sets design criteria for line clearances, strength requirements, structure distances, and all other relevant aspects related to the installation and maintenance of electric transmission lines. As described throughout the SEIR, the Project was designed to minimize impacts to sensitive environmental and cultural resources while also meeting safety and design criteria. Mitigation will be provided for environmental impacts that could not be avoided while still complying with design requirements in *220 CMR 125.00*. Vegetation maintenance requirements are described in *Section 3*.

10.4 FEDERAL REGULATORY REVIEW

10.4.1 Section 404 of the Clean Water Act

As noted in the above discussion of state permits, the wetlands along the ROW are subject to the jurisdiction of Sections 401 and 404 of the federal CWA. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The Section 401 Water Quality Certification, as administered by MassDEP, was discussed in *Section 10.3*. The Section 404 process is administered by the USACE.

The USACE (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as “*areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*”

Section 404 of the CWA establishes permit programs to regulate the discharge of dredged or fill material into waters of the United States, as well as discharges of dredged or fill material into wetlands adjacent to nominal waters (33 *CFR* 328). The Project qualifies for a PCN in accordance with the USACE MA General Permits for activities within federal wetlands as defined by Section 404 of the CWA, primarily due to the temporary BVW impacts associated with construction mats, which are considered “fill” by the USACE. NEP anticipates submitting a PCN later this year and continuing to consult with USACE through the permitting process.

The Project will meet the USACE’s requirement that areas of permanent fill be mitigated. Mitigation will be determined using criteria defined in the 2016 New England District Compensatory Mitigation Guidance, and through consultation with the USACE New England District.

10.4.2 Environmental Protection Agency

The NPDES program in MA requires that any construction project disturbing one or more acres of land and will discharge storm water (or dewatering discharges) from a site into municipal separate stormwater system or into water of the U.S., must first seek coverage under, and comply with, the EPA’s Stormwater General Permit. The NPDES General Permit requires filing an NOI with EPA that provides information on the site and identifies the site’s general operator; development of a SWPPP that includes appropriate BMPs to minimize pollutant discharges; and submitting a NOI to EPA when the site has achieved final stabilization or stormwater is no longer being discharged. No new point sources of stormwater will be created as a part of this Project.

The Project will comply with the requirements of the NPDES Construction General Permit. As a component to this compliance, a site-specific SWPPP will be prepared and implemented throughout the Project’s construction and restoration phases. Implementation of this plan will include extensive use of erosion and sediment control measures designed to minimize site disturbance and prevent opportunities for sedimentation to occur offsite or toward wetland resource areas.

10.4.3 U.S. Fish and Wildlife Service

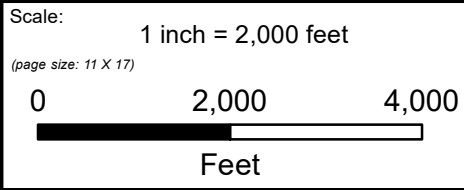
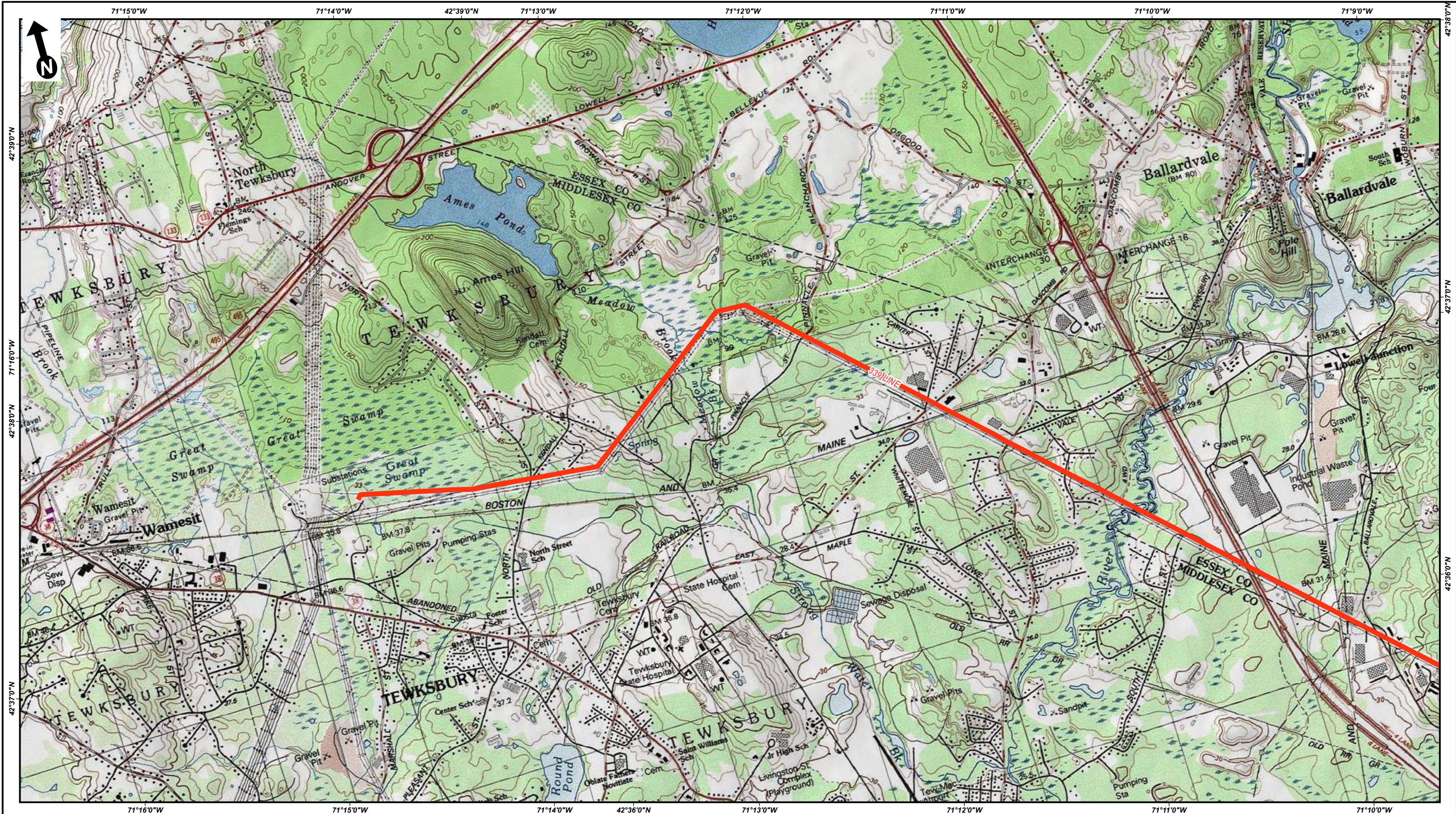
Under the Endangered Species Act, any action requiring one or more federal permits or licenses must also consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that proposed actions do not jeopardize listed species or destroy or adversely modify critical habitat. Accordingly, the USFWS Endangered Species Consultation Procedure available on their website was followed. As a result, it was determined while the Project area is mapped for the Federally Listed northern long-eared bats (*Myotis septentrionalis*). There are no known hibernacula within 0.25 miles of the Project area and no known maternity roost trees within a 150-foot buffer.

10.4.4 Section 106 and the National Historic Preservation Act

See *Section 10.3.5*.

Attachment A

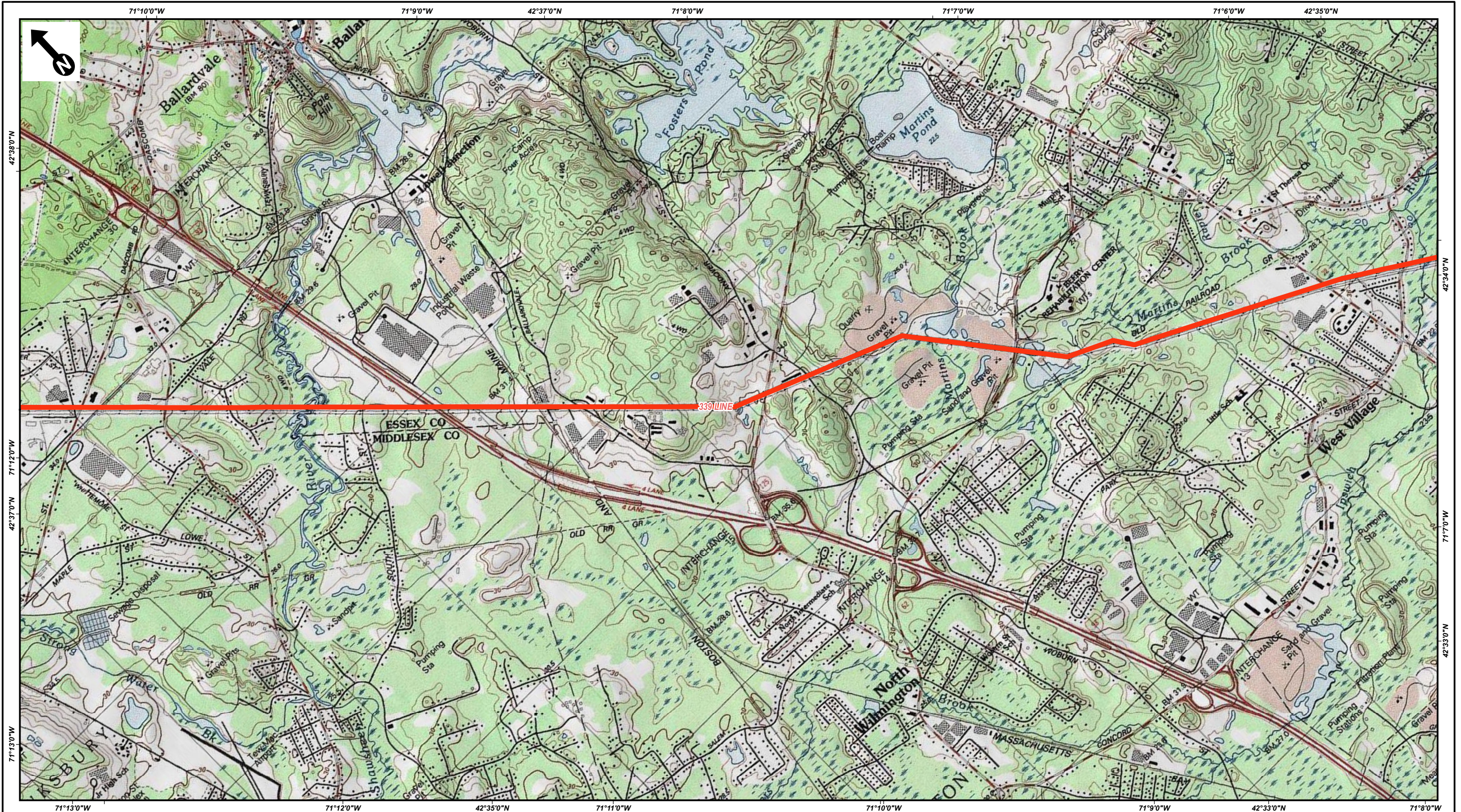
FIGURES AND SITE PLANS



339/349 ACR PROJECT
USGS Site Location Map
Andover & Tewksbury, MA
Page 1 of 5

Source: 2013
National Geographic
Society, i-cubed

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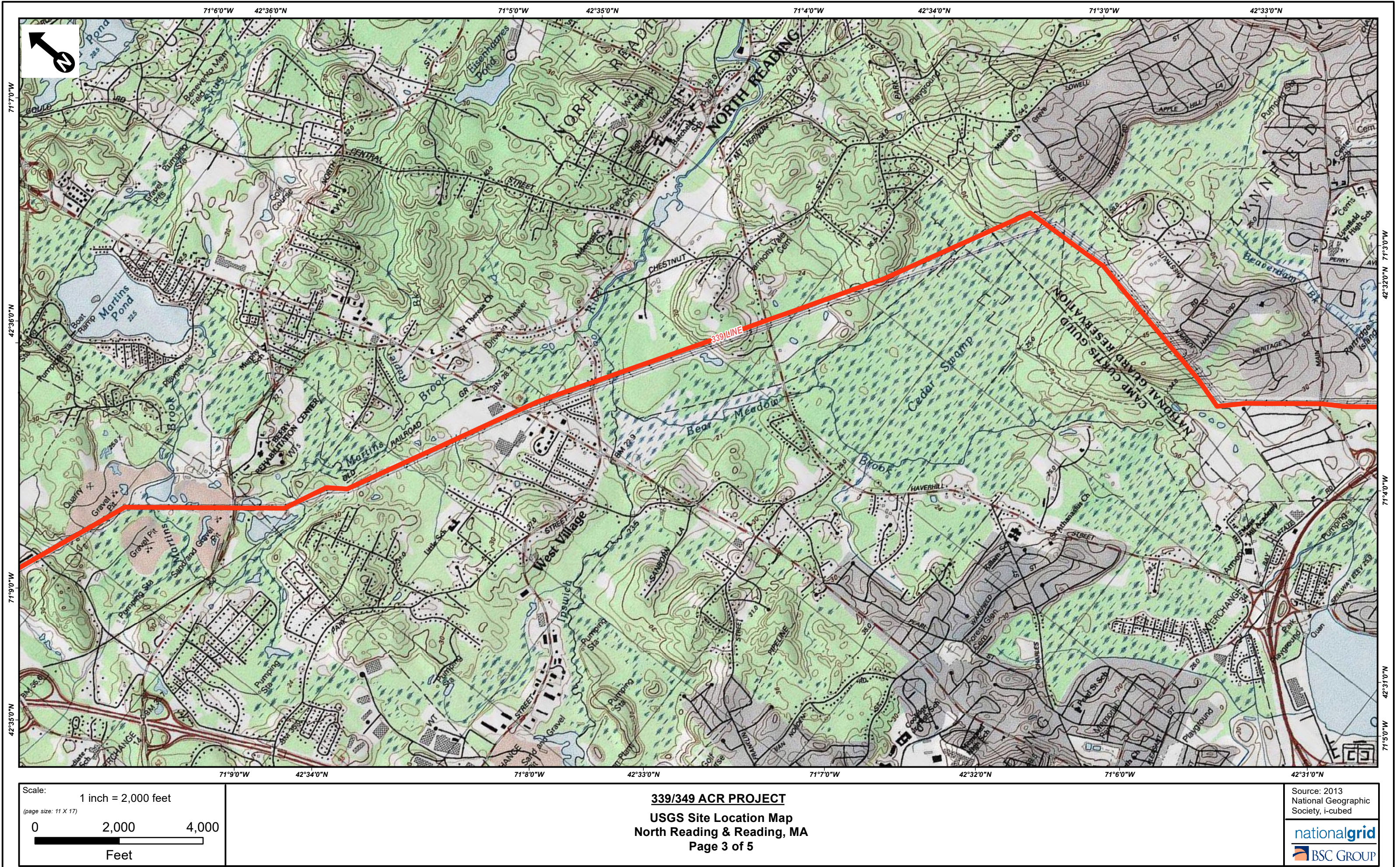
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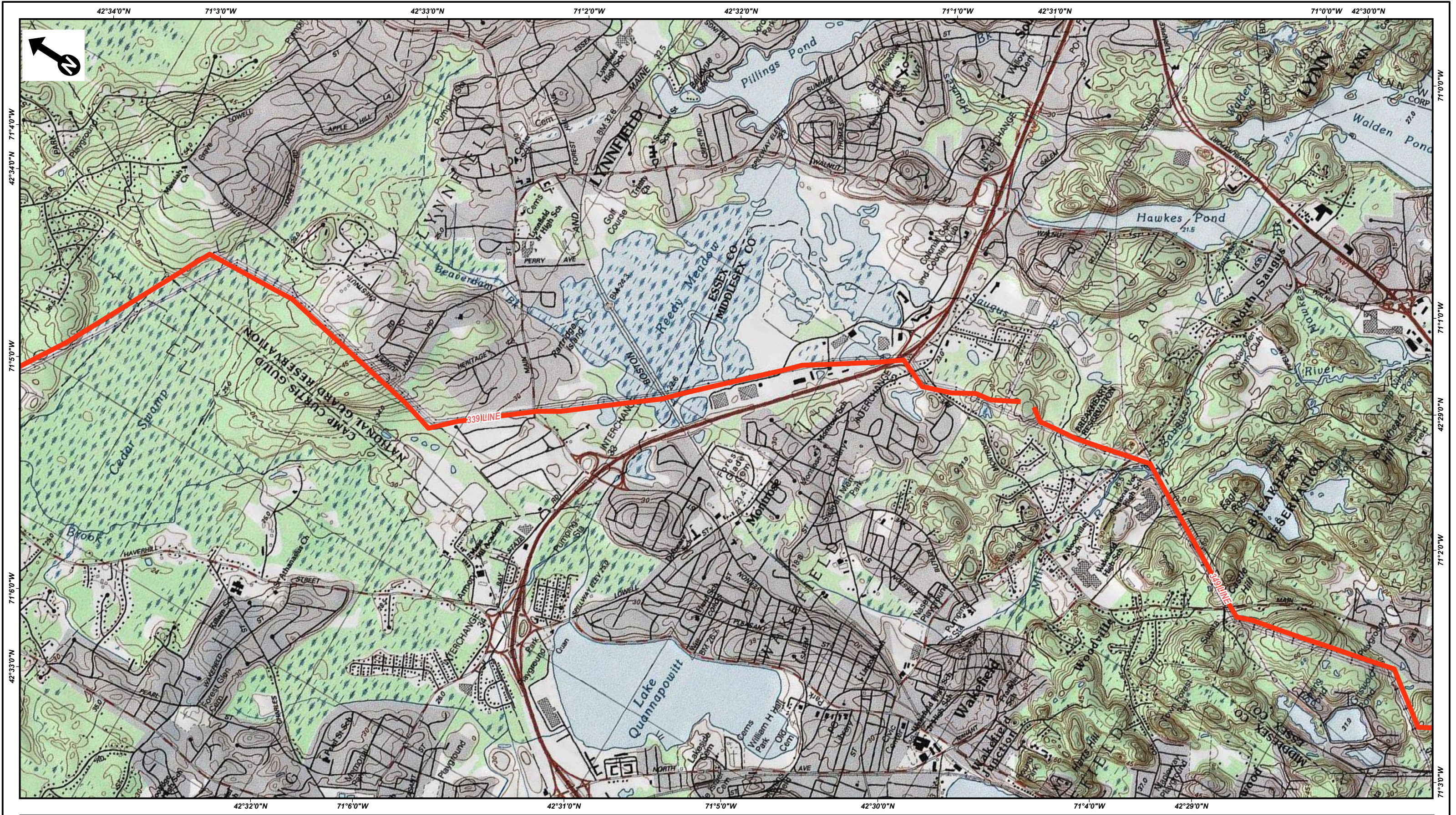
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339/349 ACR PROJECT
USGS Site Location Map
Andover, Tewksbury, North Reading & Wilmington, MA
Page 2 of 5

Source: 2013
National Geographic
Society, i-cubed

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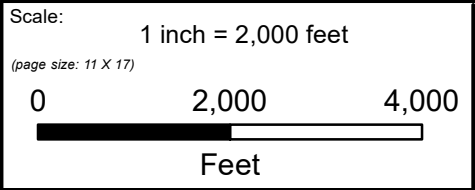
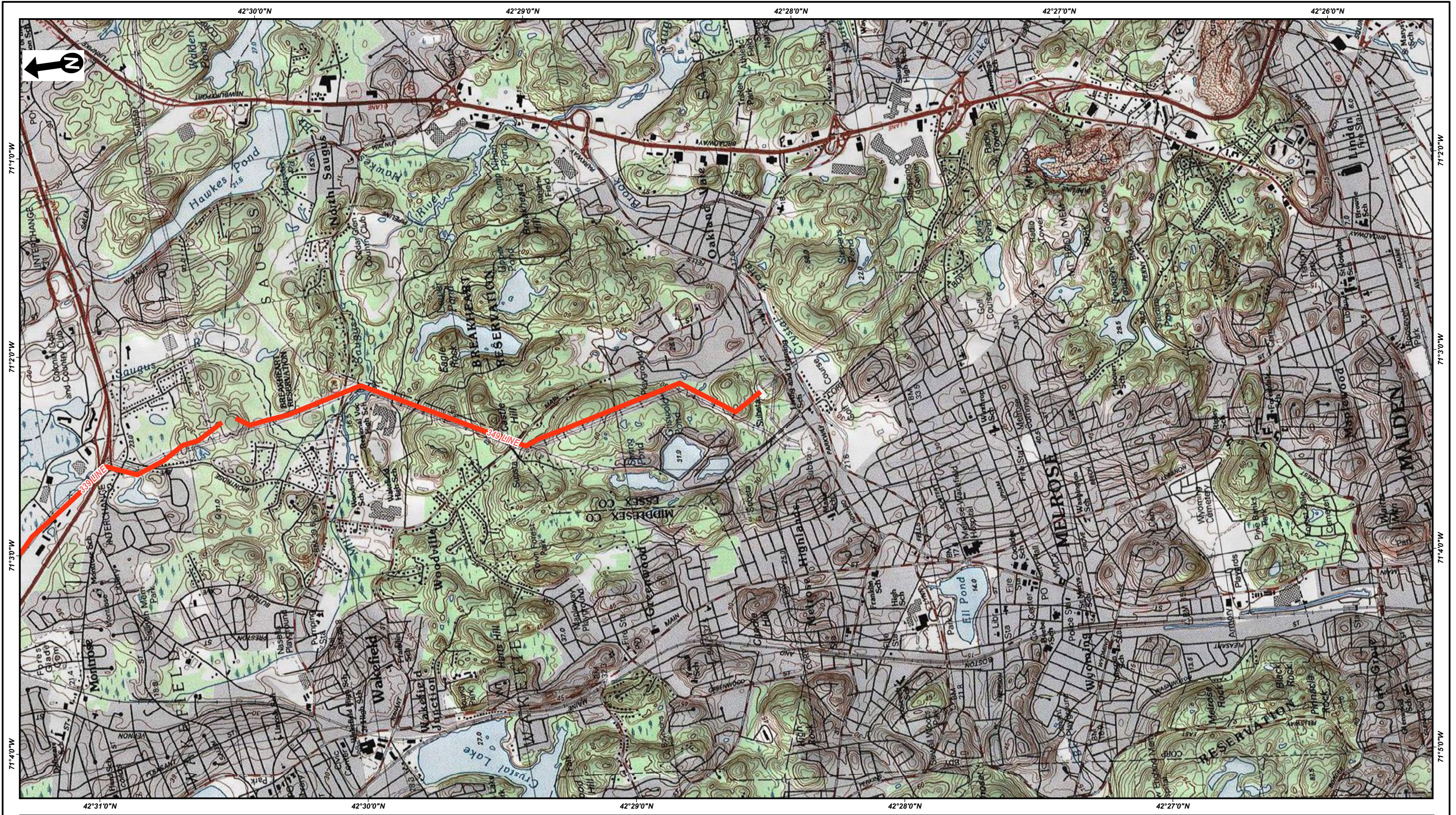
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339/349 ACR PROJECT
USGS Site Location Map
Lynnfield & Wakefield, MA
Page 4 of 5

Source: 2013
National Geographic
Society, i-cubed

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339/349 ACR PROJECT

USGS Site Location Map

Melrose, Saugus & Wakefield, MA

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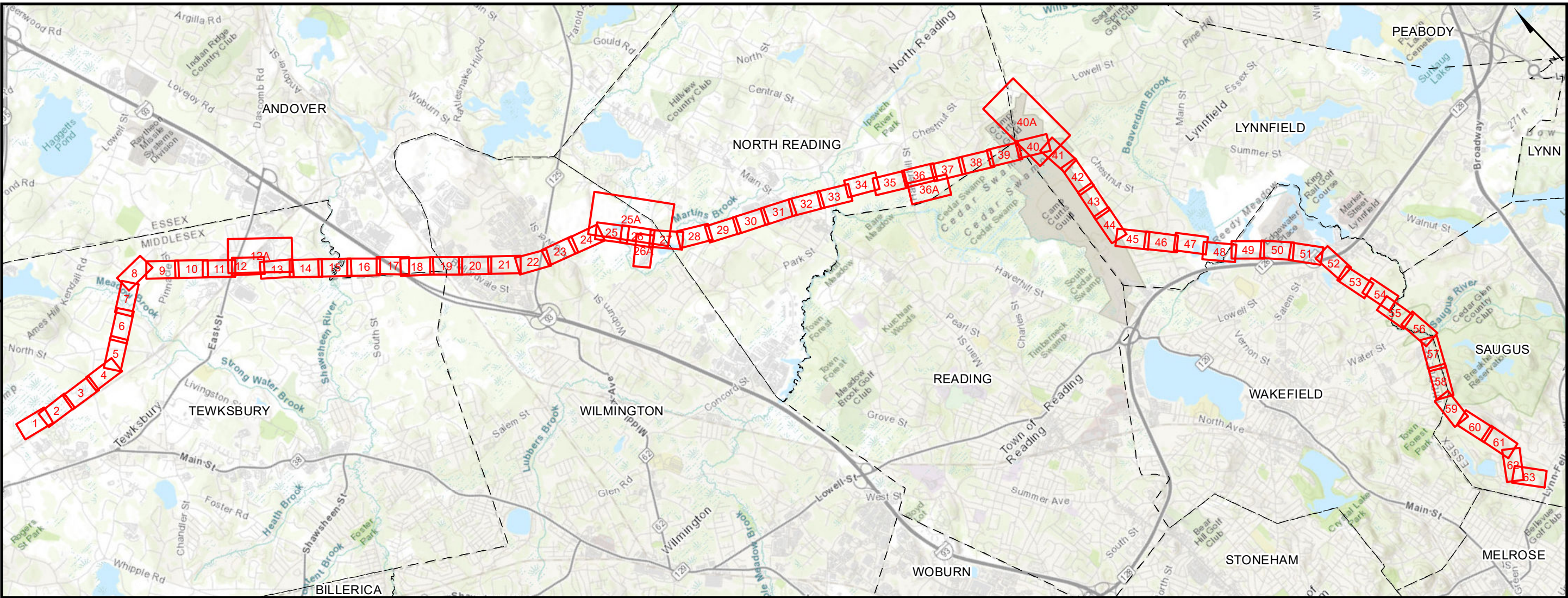
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339/349 Line ACR - MEPA General Purpose Plans

Tewksbury, Andover, Wilmington, North Reading, Reading,
Lynnfield, Wakefield, and Saugus, Massachusetts
Environmental Resources Maps
February 10, 2023



PREPARED FOR:

nationalgrid

40 Sylvan Road
Waltham, MA 02451

INDEX OF FIGURES

- T1 - TITLE SHEET
- T2 - GENERAL NOTES
- 1 - 63 - MAP SHEETS
- 12A - 40A - OFF ROW ACCESS SHEETS

ISSUED FOR PERMITTING
NOT CONSTRUCTION

PREPARED BY:

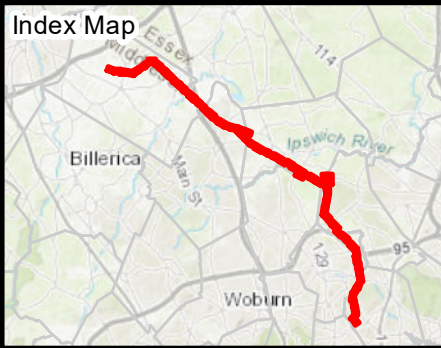
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33 Waldo Street
Worcester, MA 01608

GENERAL NOTES

Road Type	Description
Type R	Repair existing stable sub-base road in accordance with EG-303NE. Fill potholes & ATV ruts only. No grading or widening.
Type S	Refresh with stone and potentially widen existing stable sub-base road. Widen as necessary via the addition of stone to 16-foot standard width. Limit grading to areas requiring widening.
Type 1	National Grid Standard Road (16-foot wide). Cap existing stable sub-base. Add stone per Type 1 specifications.
Types 2 - 5	Engineered Road per National Grid standards. See site-specific drawings.

339 Line:	349 Line:
27,223 linear feet of Type R access roads.	2,002 linear feet of Type R access roads.
25,394 linear feet of Type S access roads.	5,319 linear feet of Type S access roads.
853 linear feet of Type 1 access roads.	3,936 linear feet of Type 1 access roads.
4,770 linear feet of Type 2 access roads.	3,779 linear feet of Type 2 access roads.
413 linear feet of Type 5 access roads.	2,006 linear feet of Type 5 access roads.

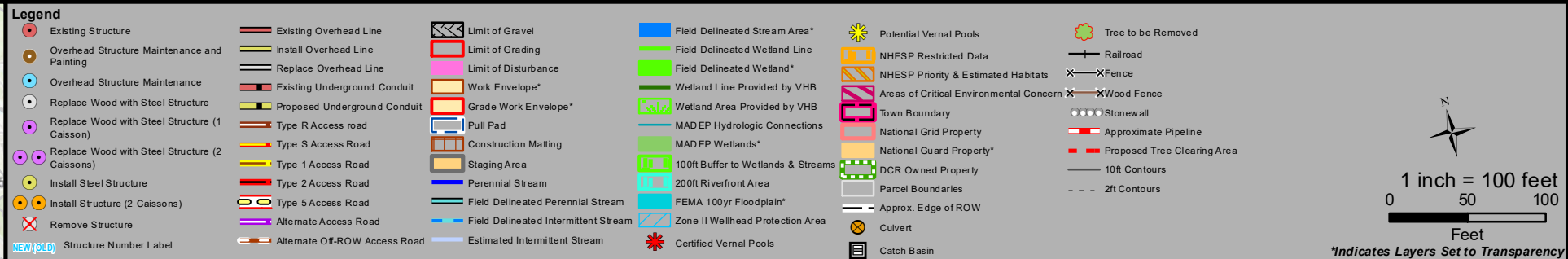
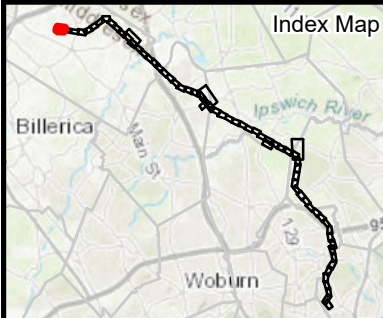
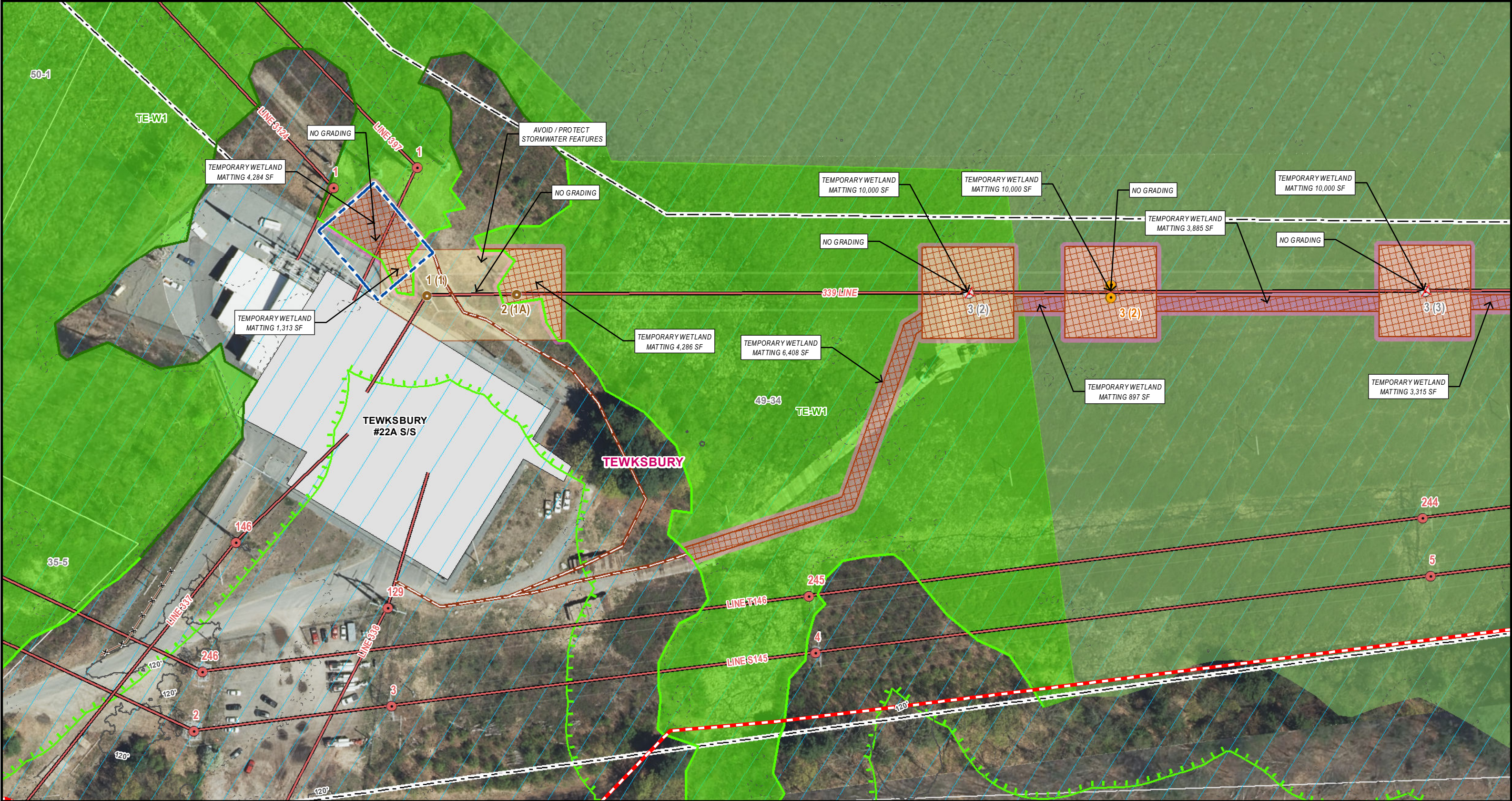


339/349 LINE ACR - MEPA GENERAL PURPOSE PLANS

Tewksbury, Andover, Wilmington, North Reading, Reading,
Lynnfield, Wakefield, and Saugus, Massachusetts
General Notes

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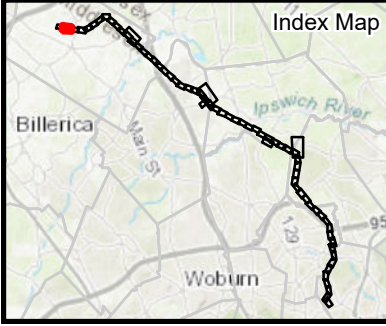


339/349 LINE ACR

MEPA General Purpose Plans 50% Design

Tewksbury, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	X Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Steel Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Structure Number Label	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

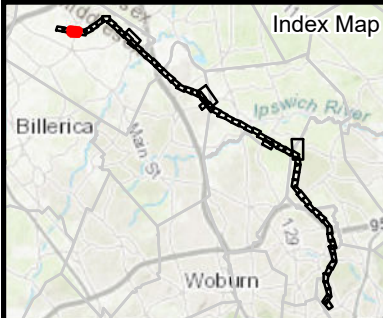
Tewksbury, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access roadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX-FenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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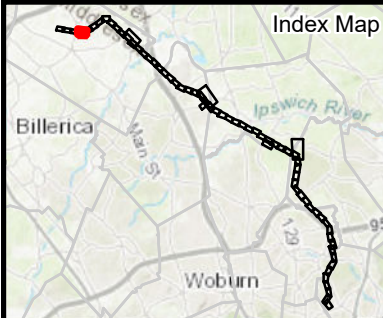
1 inch = 100 feet
0 50 100 Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR
MEPA General Purpose Plans
50% Design

Tewksbury, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access Road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X Fence
- X Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

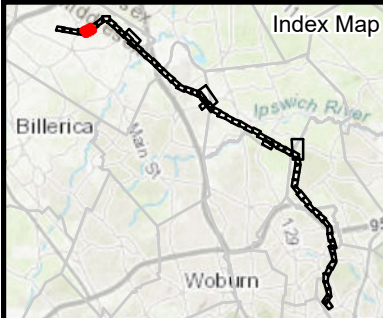
Tewksbury, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceX Wood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

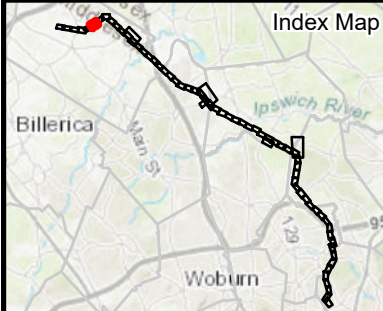
Tewksbury, MA

Page 5 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MADEP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MADEP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	OCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

1 inch = 100 feet

0 50 100

Feet

**Indicates Layers Set to Transparency*

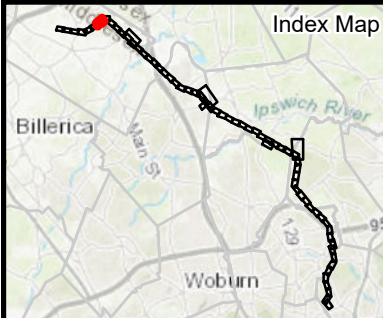
339/349 LINE ACR

MEPA General Purpose Plans 50% Design

Tewksbury, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access roadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceX Wood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours	<ul style="list-style-type: none">Article 97 LandsMunicipal
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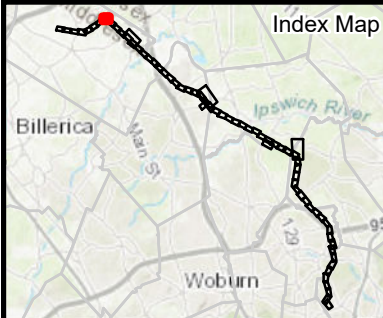
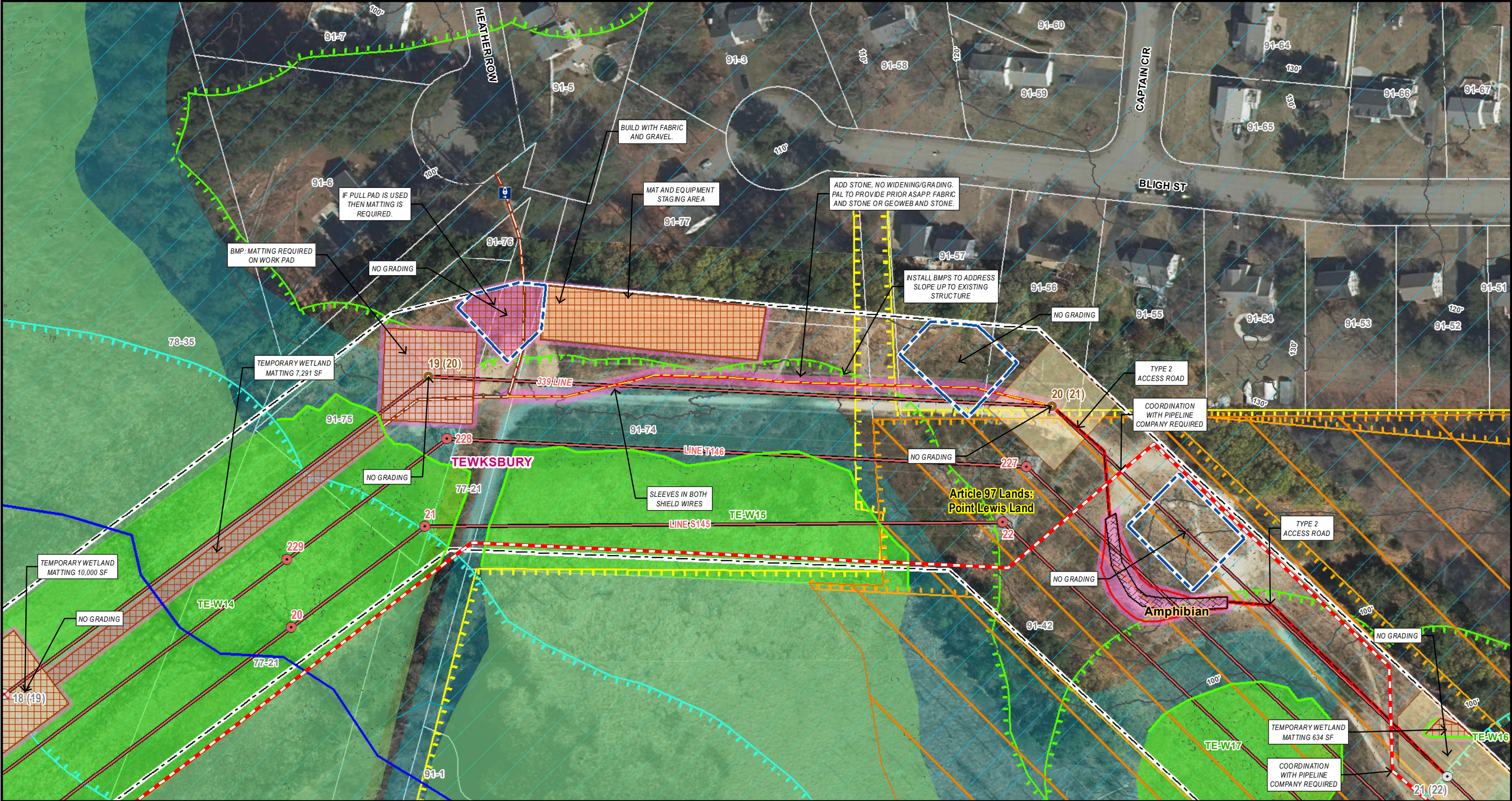
1 inch = 100 feet
0 50 100 Feet
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339/349 LINE ACR
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50% Design

Tewksbury, MA
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Legend	Legend	Legend	Legend	Legend	Legend
<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX-FenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
					Article 97 Lands
					<ul style="list-style-type: none">Municipal

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MEPA General Purpose Plans

50% Design

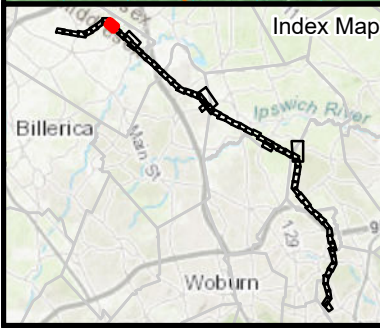
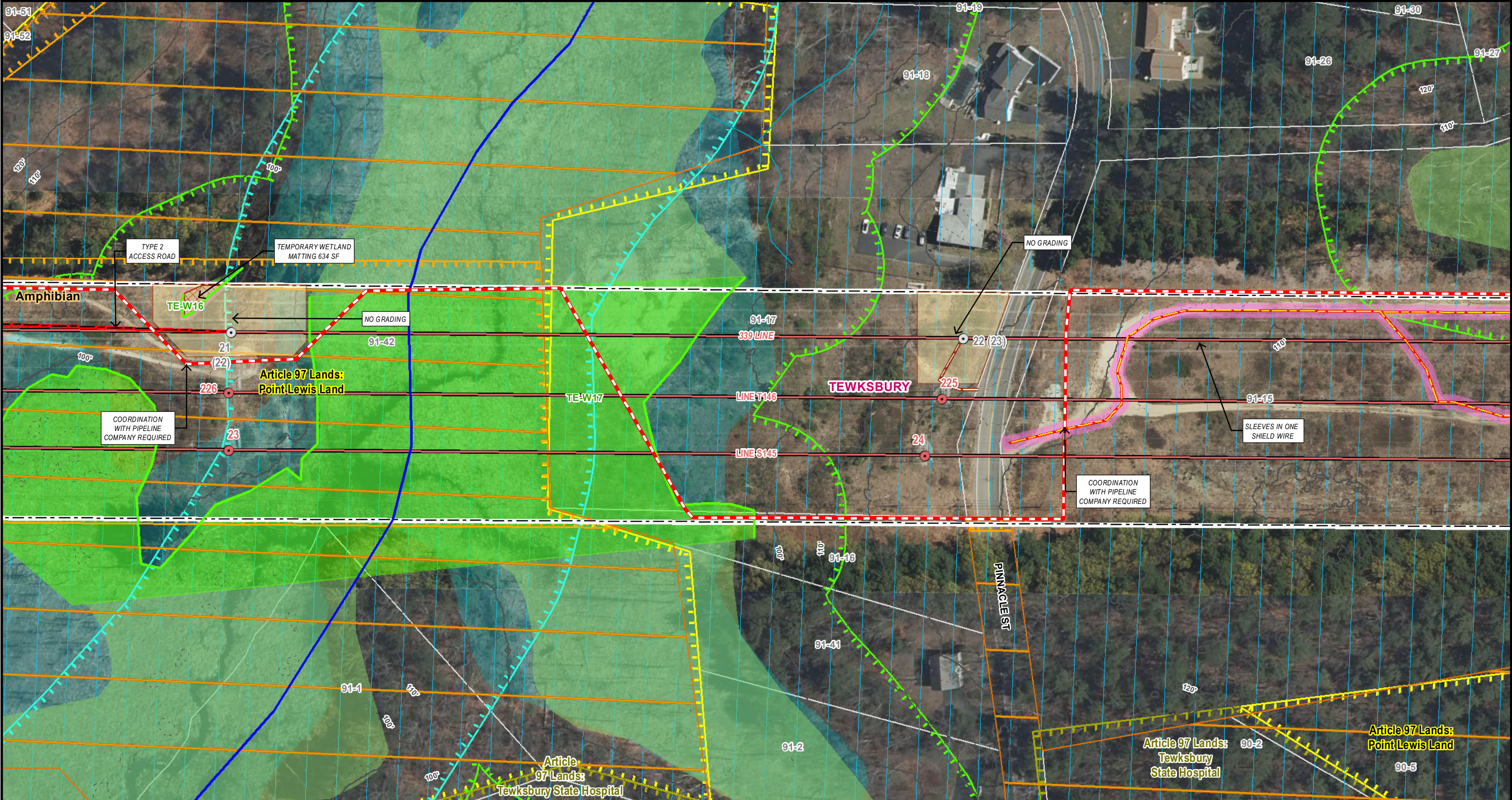
Tewksbury, MA

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Legend

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1 inch = 100 feet
0 50 100 Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR

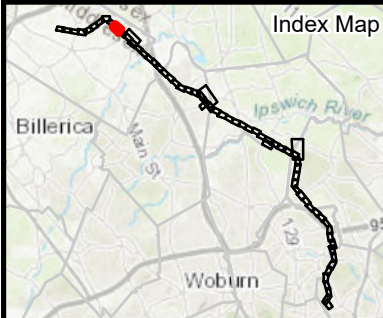
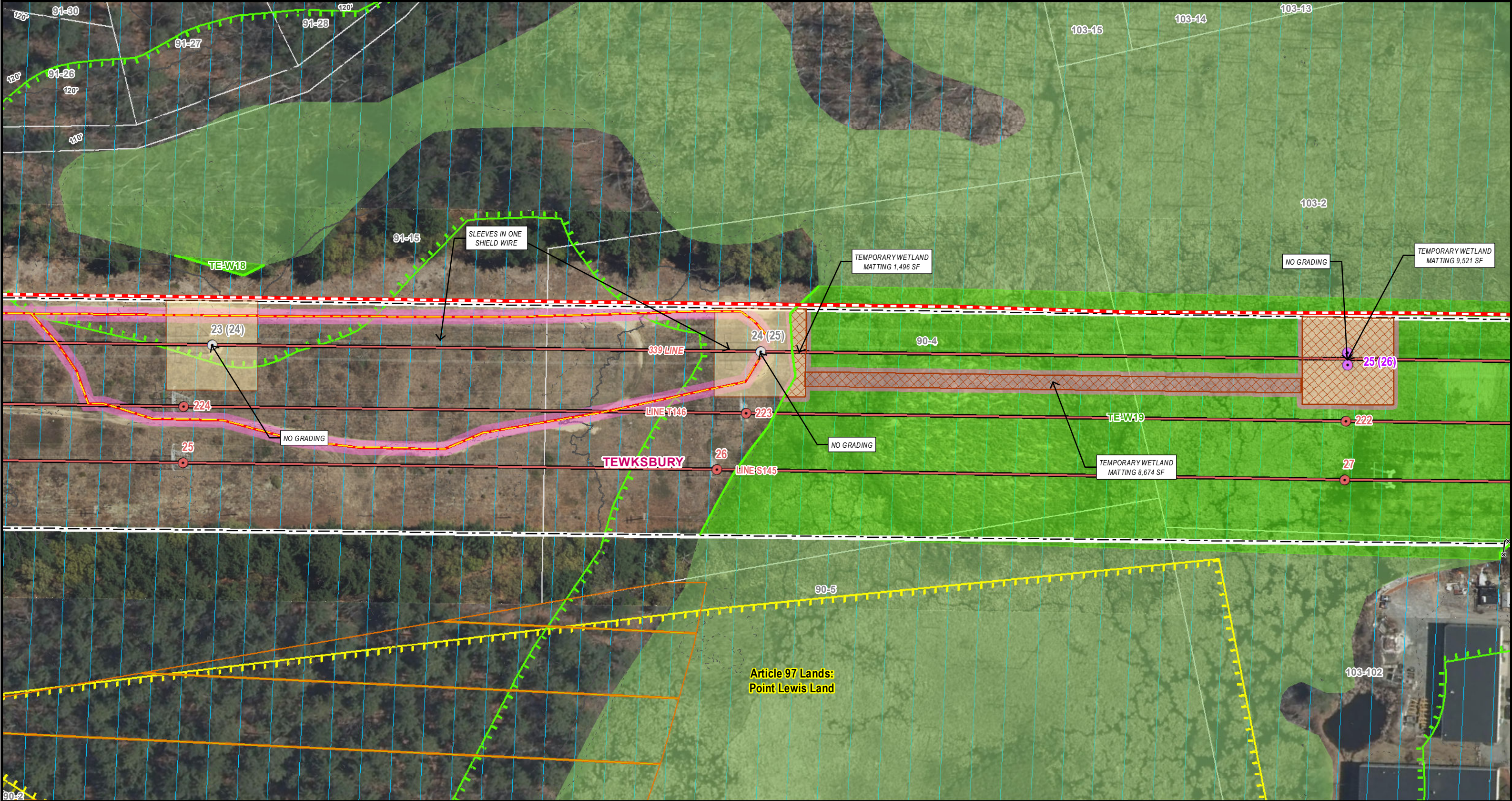
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50% Design

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Page 9 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
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- Replace Overhead Line
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- Grade Work Envelope*
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- Certified Vernal Pools

- Potential Vernal Pools
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- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
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- National Grid Property
- National Guard Property*
- DCR Owned Property
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- Approx. Edge of ROW
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- Railroad
- X Fence
- X Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Commonwealth of Massachusetts
- Municipal

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

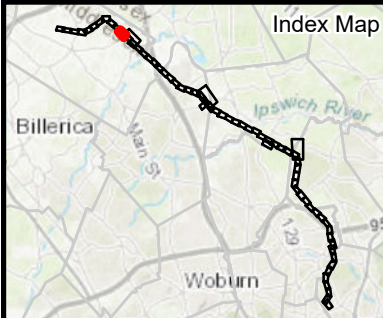
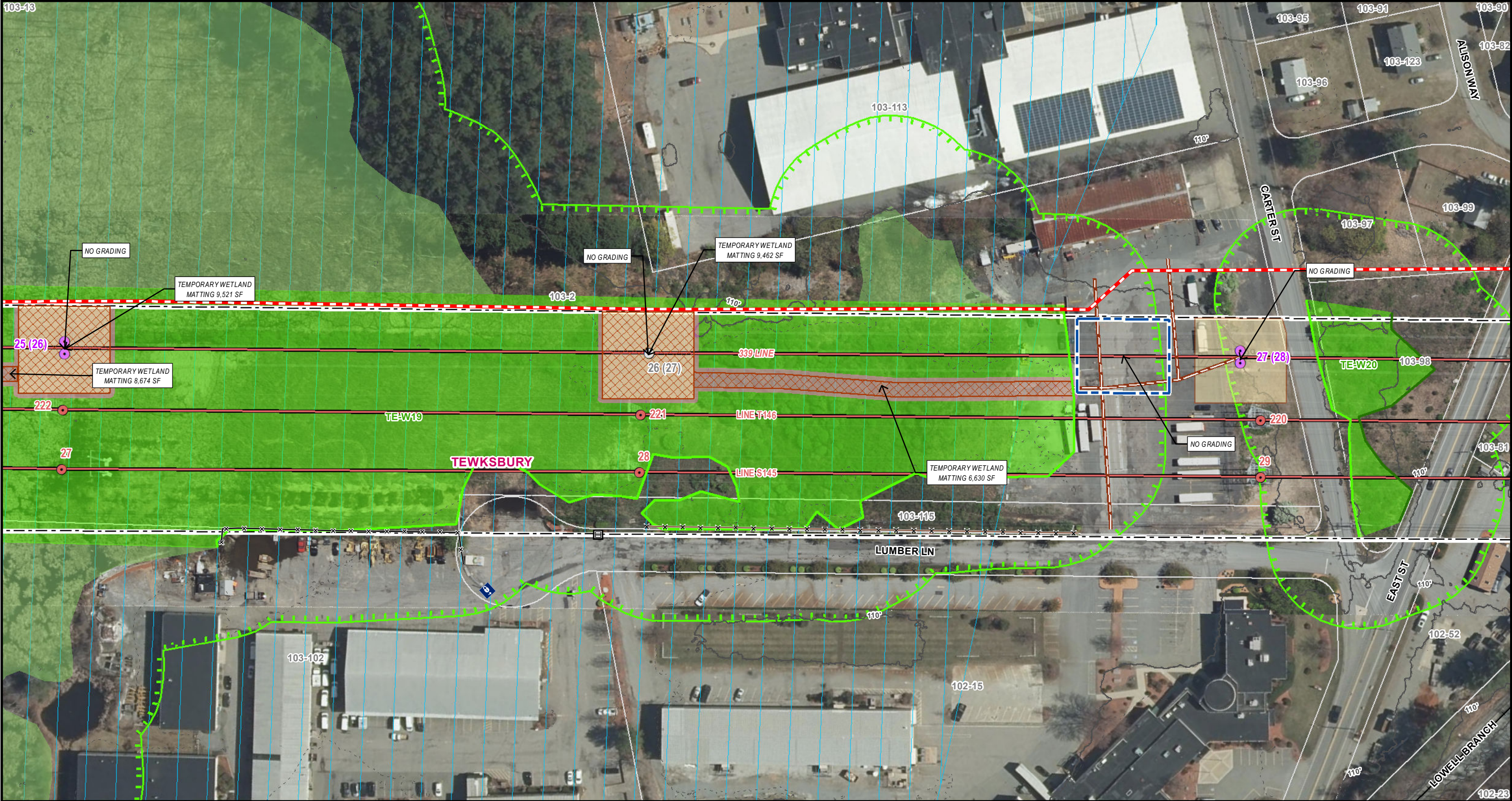
Tewksbury & Andover, MA

Page 10 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access roadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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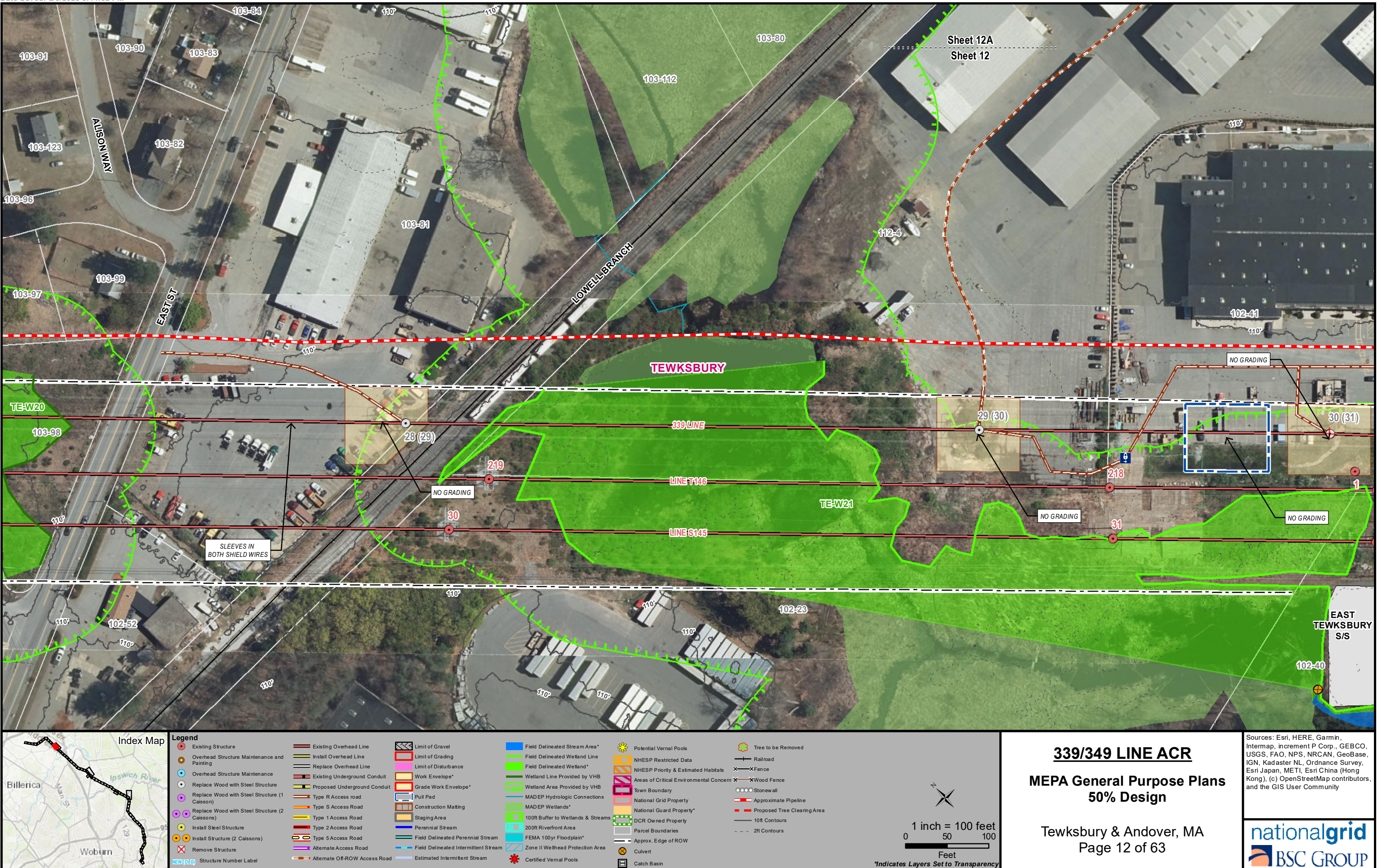
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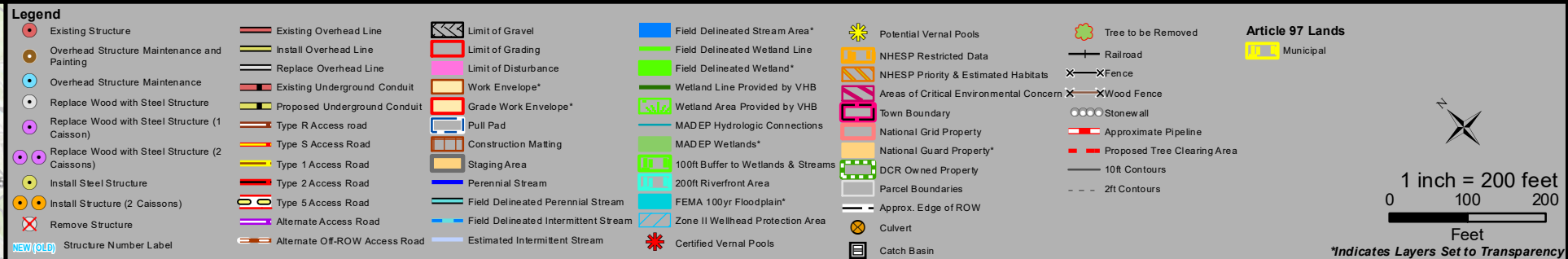
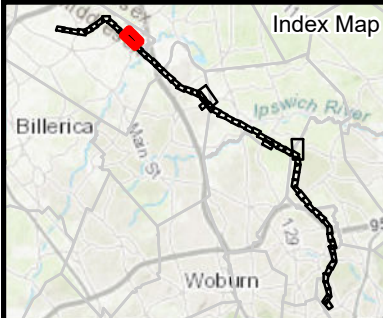
339/349 LINE ACR
MEPA General Purpose Plans
50% Design

Tewksbury, MA
Page 11 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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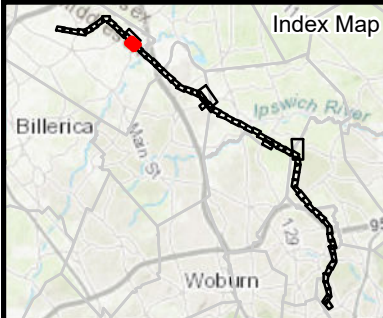
339/349 LINE ACR

MEPA General Purpose Plans
50% Design

Tewksbury, MA
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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
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- Replace Wood with Steel Structure
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- Replace Wood with Steel Structure (2 Caissons)
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Article 97 Lands

- Municipal

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

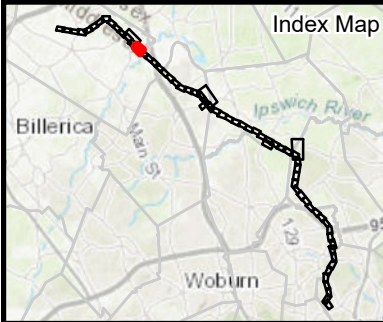
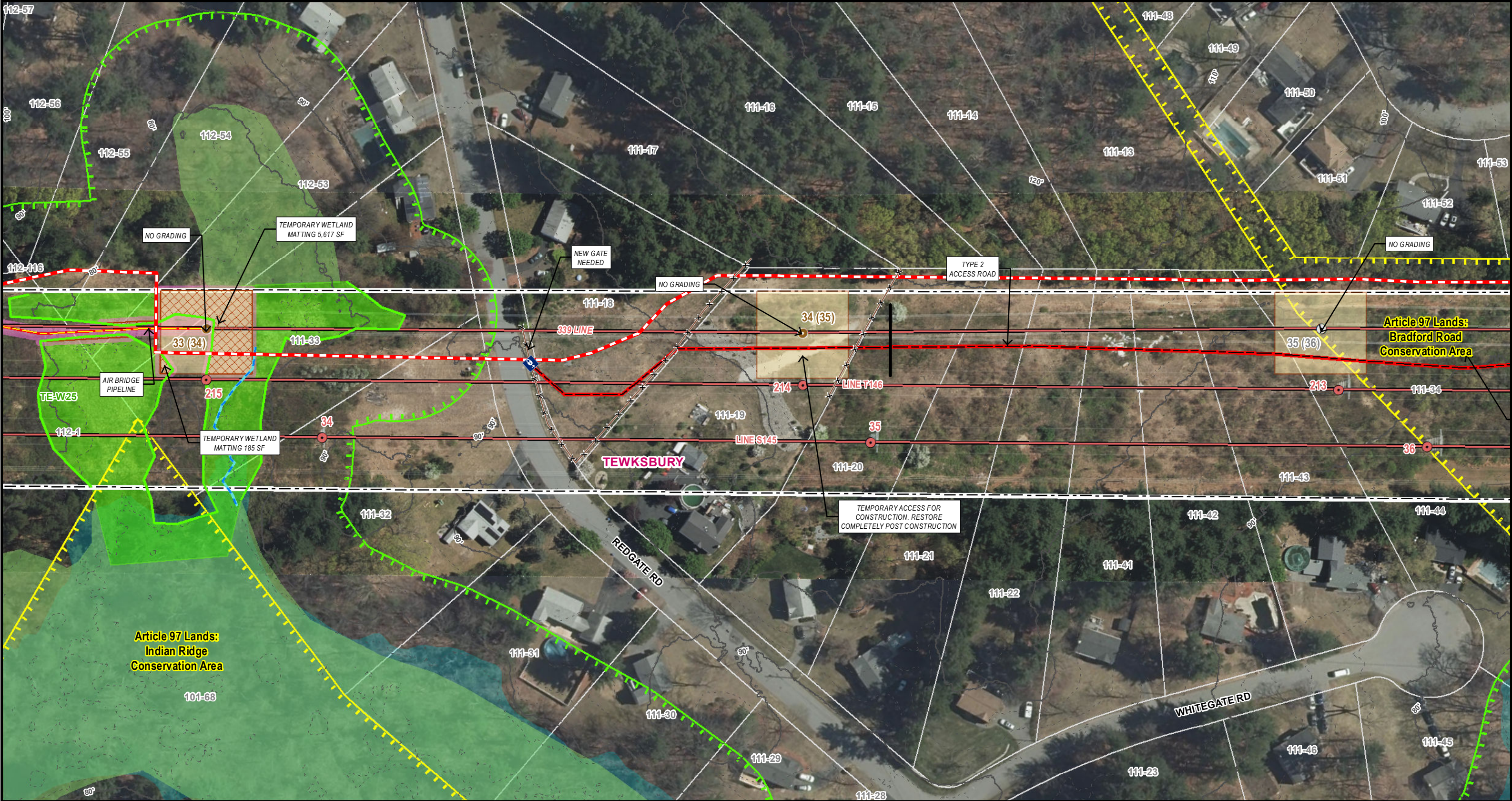
Tewksbury, MA

Page 13 of 63

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Legend	Article 97 Lands
<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureNEW (GLD) Structure Number Label	<ul style="list-style-type: none">Municipal
<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access roadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">NHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard PropertyDCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin
<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Potential Vernal PoolsTree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools

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MEPA General Purpose Plans

50% Design

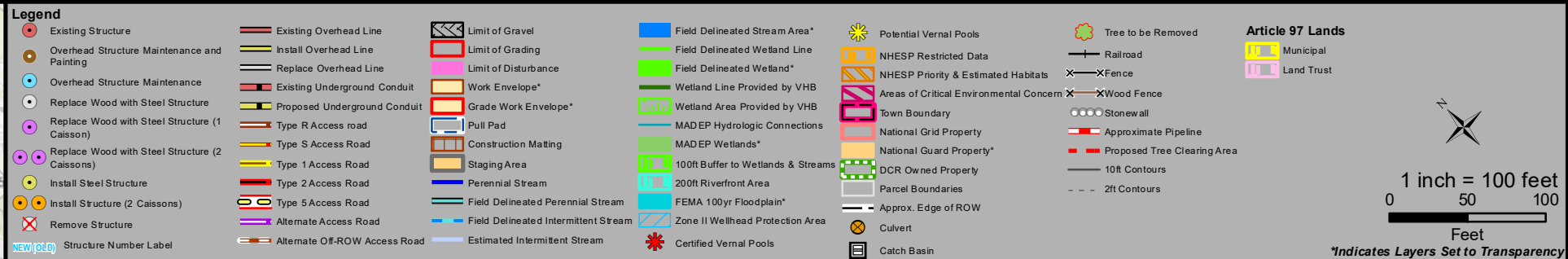
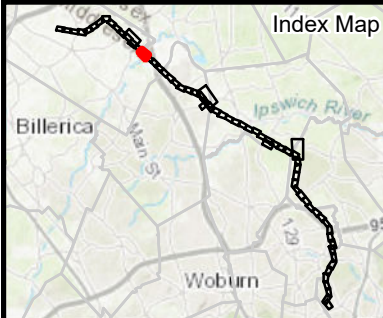
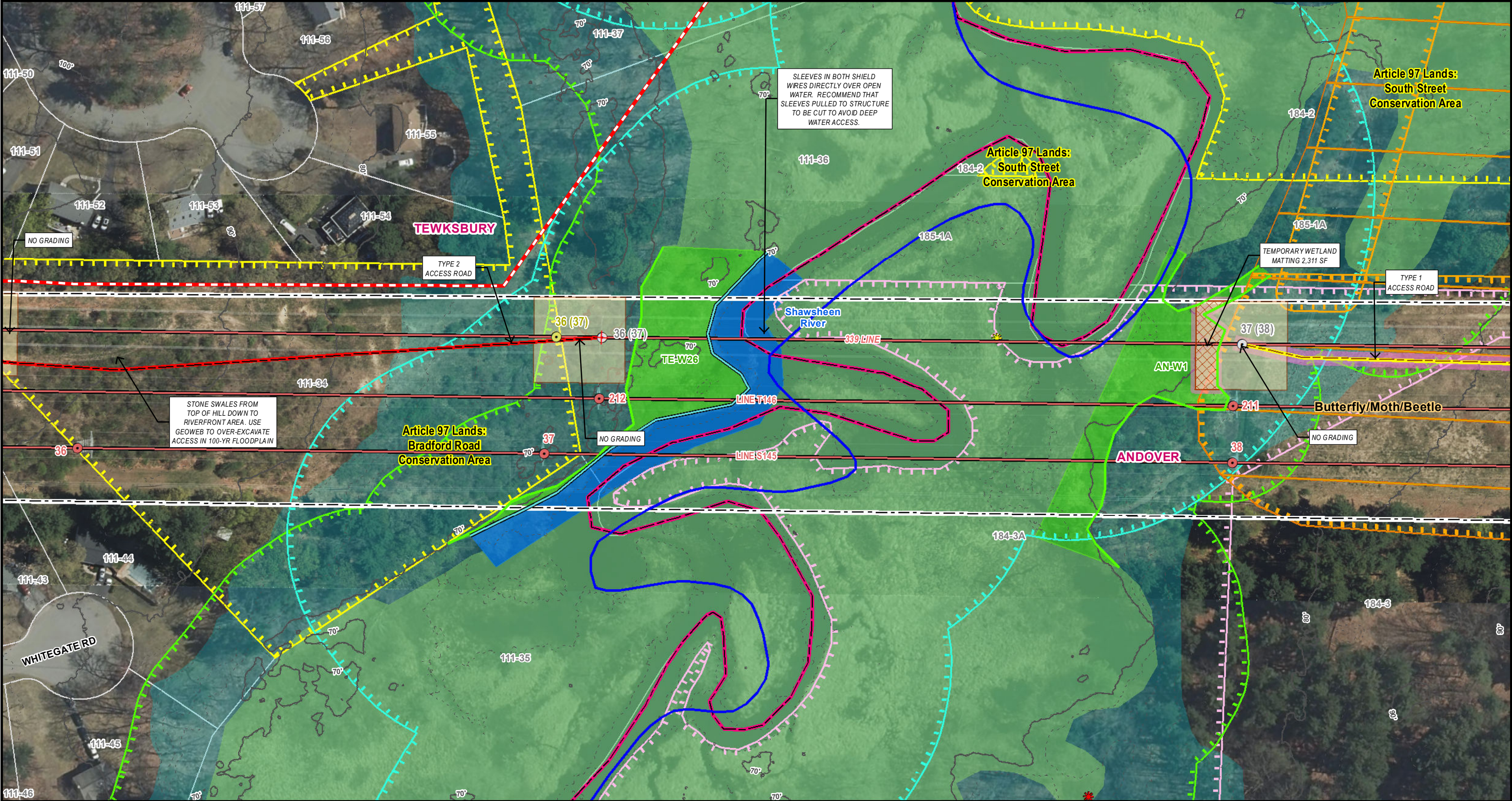
Tewksbury, MA

Page 14 of 63

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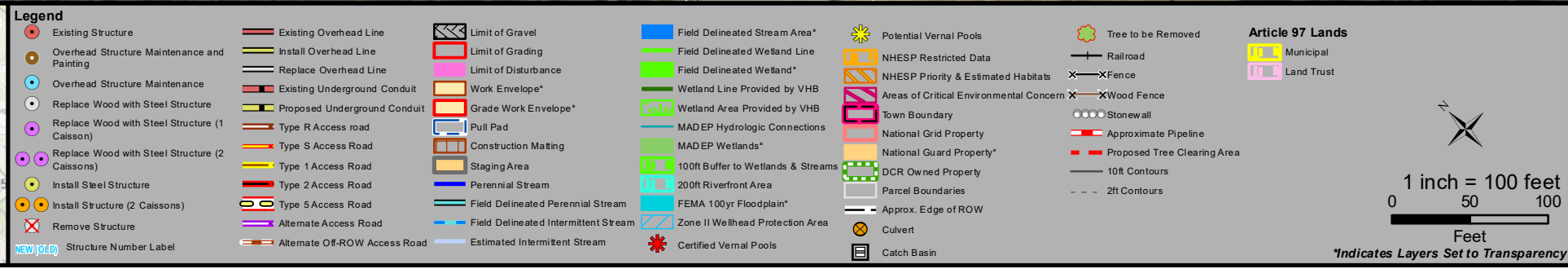
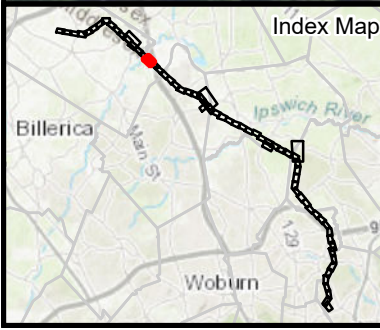
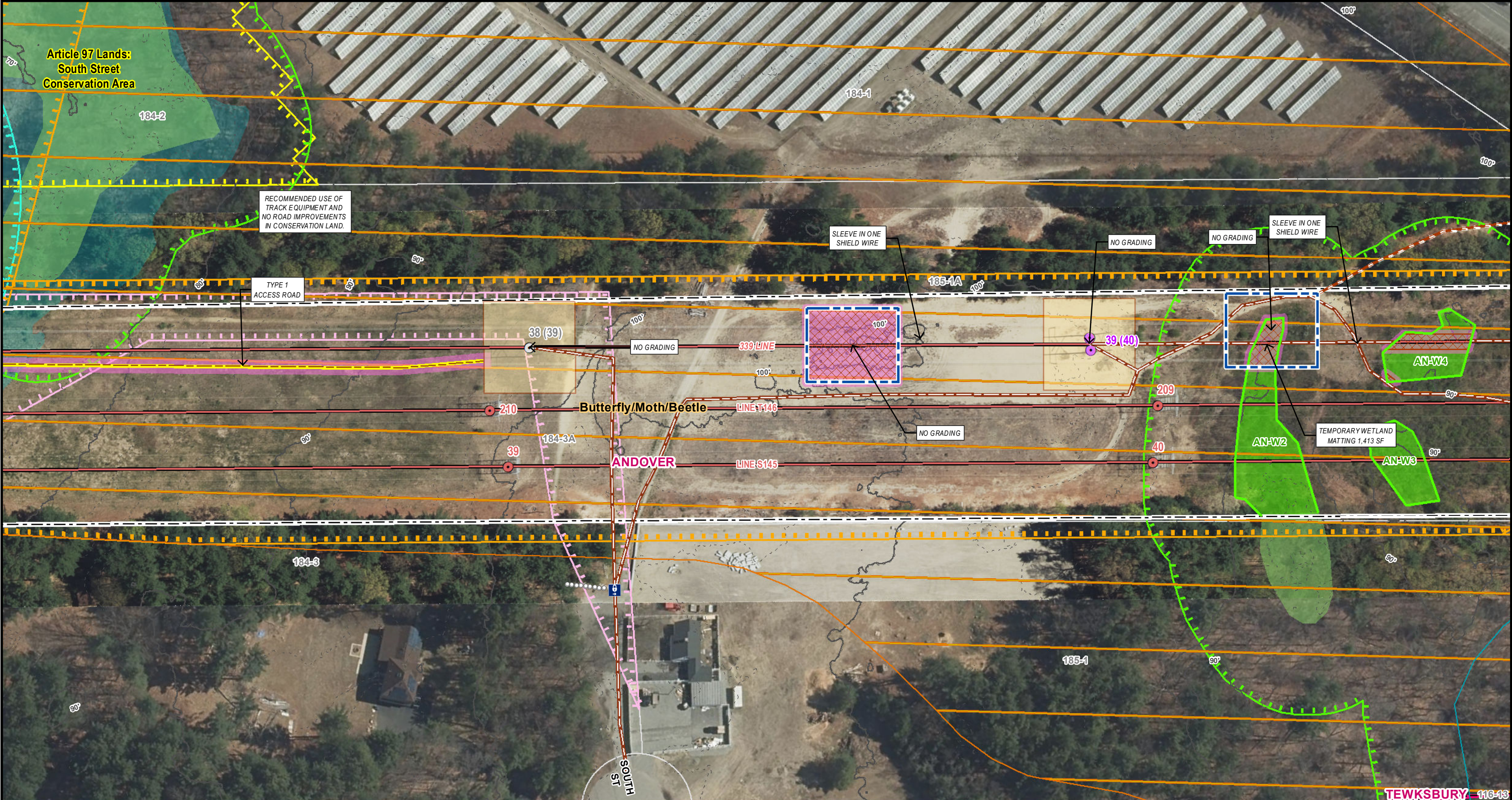
Tewksbury & Andover, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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MEPA General Purpose Plans

50% Design

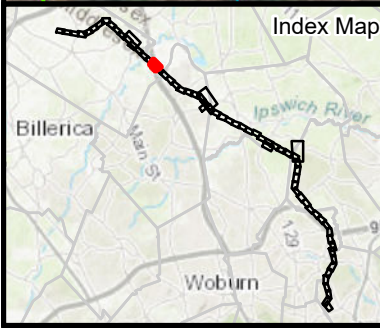
Tewksbury & Andover, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend	Legend	Legend	Legend	Legend
<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin
<ul style="list-style-type: none">Tree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours				

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MEPA General Purpose Plans

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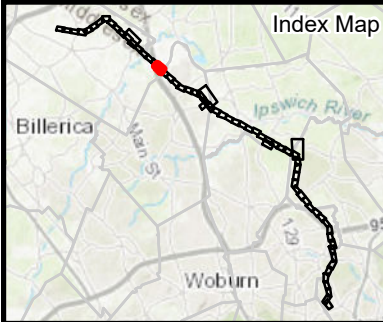
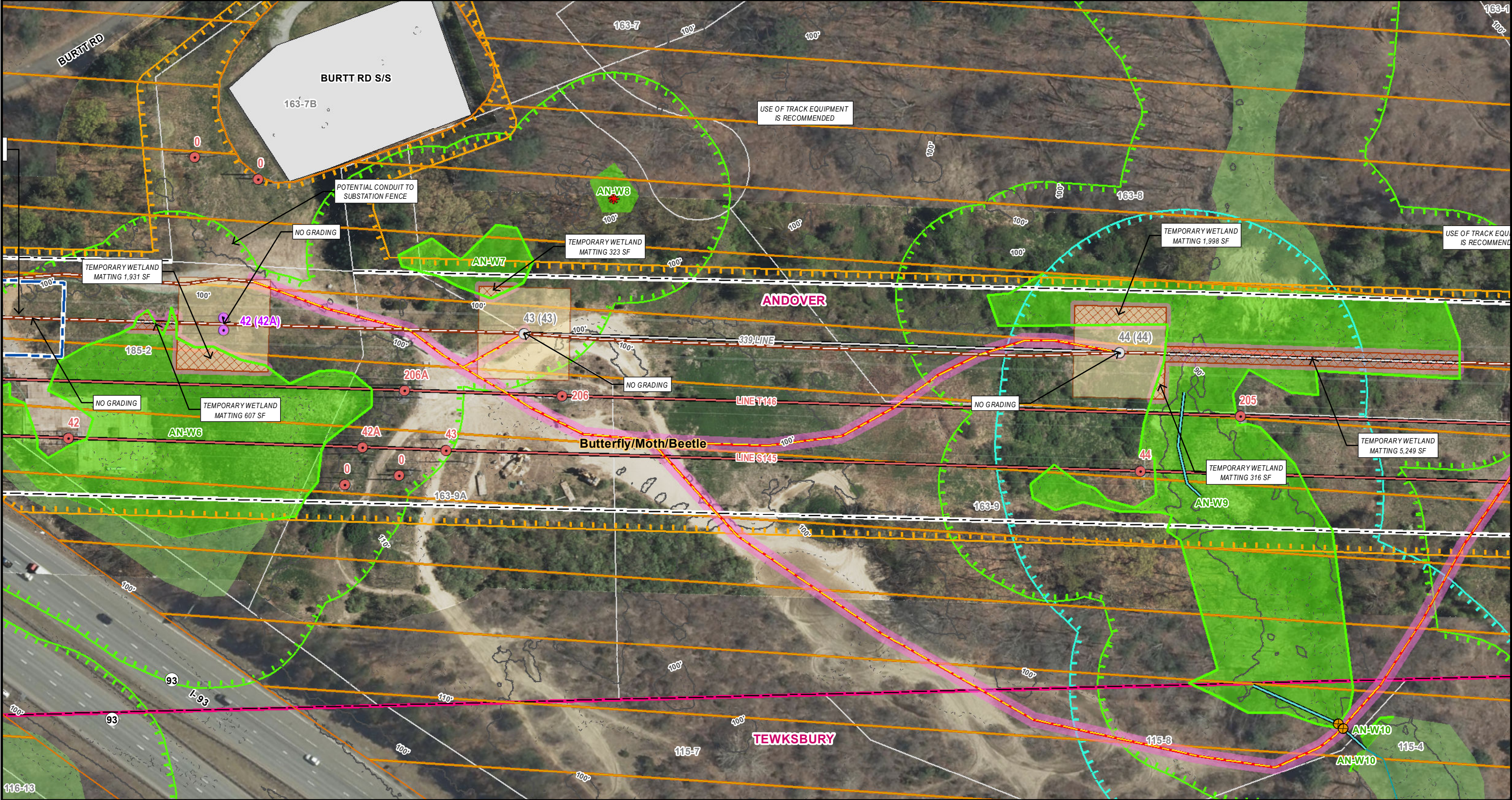
Tewksbury & Andover, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access Road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X Fence
- X Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

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MEPA General Purpose Plans

50% Design

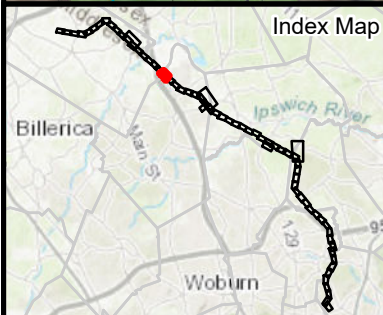
Tewksbury & Andover, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Replace Wood with Steel Structure (2 Caissons)	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Steel Structure	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Install Steel Structure (2 Caissons)	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Remove Structure	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
Remove Structure	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
Remove Structure	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

Scale: 1 inch = 100 feet
0 50 100 Feet

**Indicates Layers Set to Transparency*

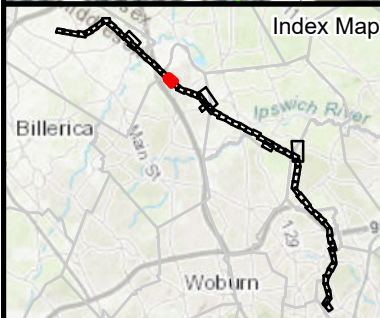
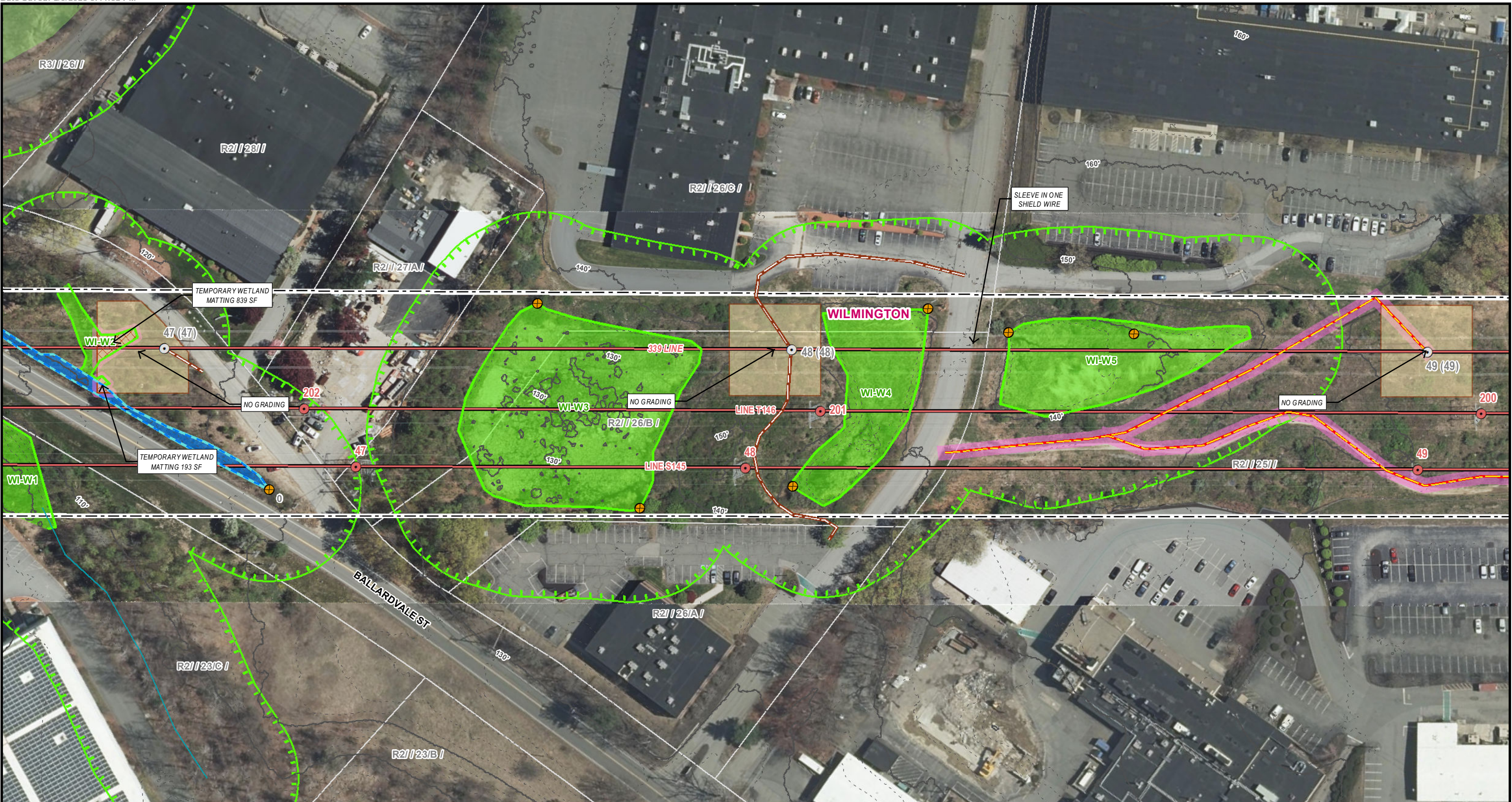
339/349 LINE ACR

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Remove Structure	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

Structure Number Label

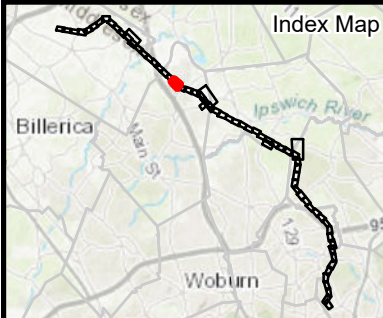
1 inch = 100 feet
0 50 100 Feet
*Indicates Layers Set to Transparency

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MEPA General Purpose Plans
50% Design

Wilmington, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wetland Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X Fence
- X Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

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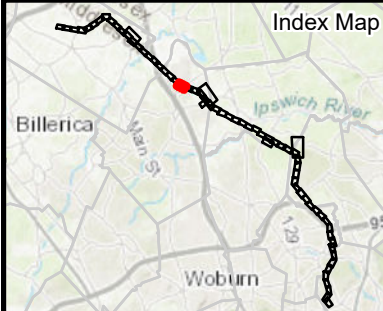
MEPA General Purpose Plans

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Wilmington, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed	Article 97 Lands
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad	Municipal
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence	
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence	
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall	
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline	
Replace Wood with Steel Structure (2 Caissons)	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area	
Install Steel Structure	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours	
Install Steel Structure (2 Caissons)	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours	
Remove Structure	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW		
Remove Structure	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert		
Remove Structure	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin		
Remove Structure						

Scale: 1 inch = 100 feet
0 50 100 Feet

**Indicates Layers Set to Transparency*

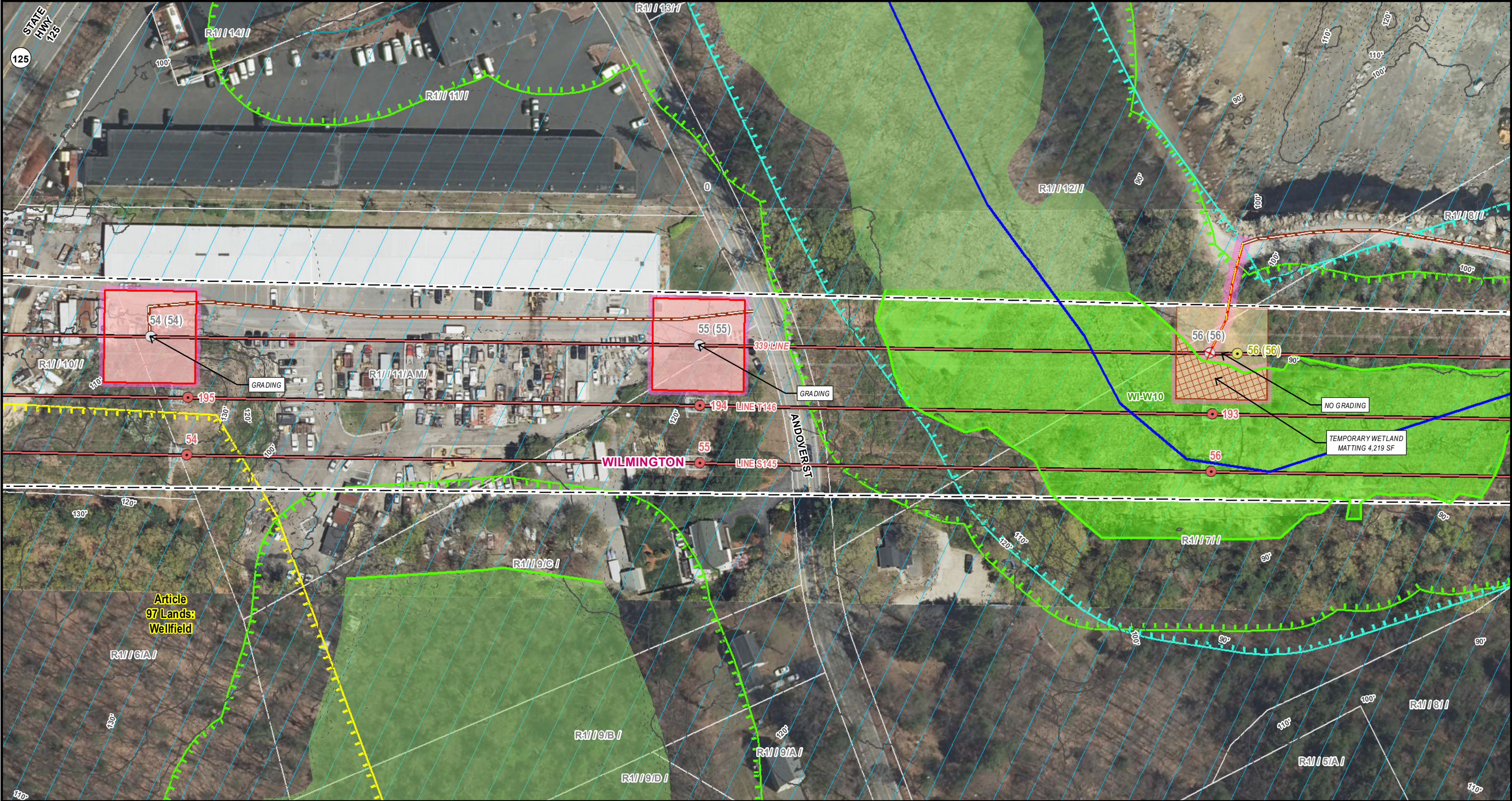
339/349 LINE ACR

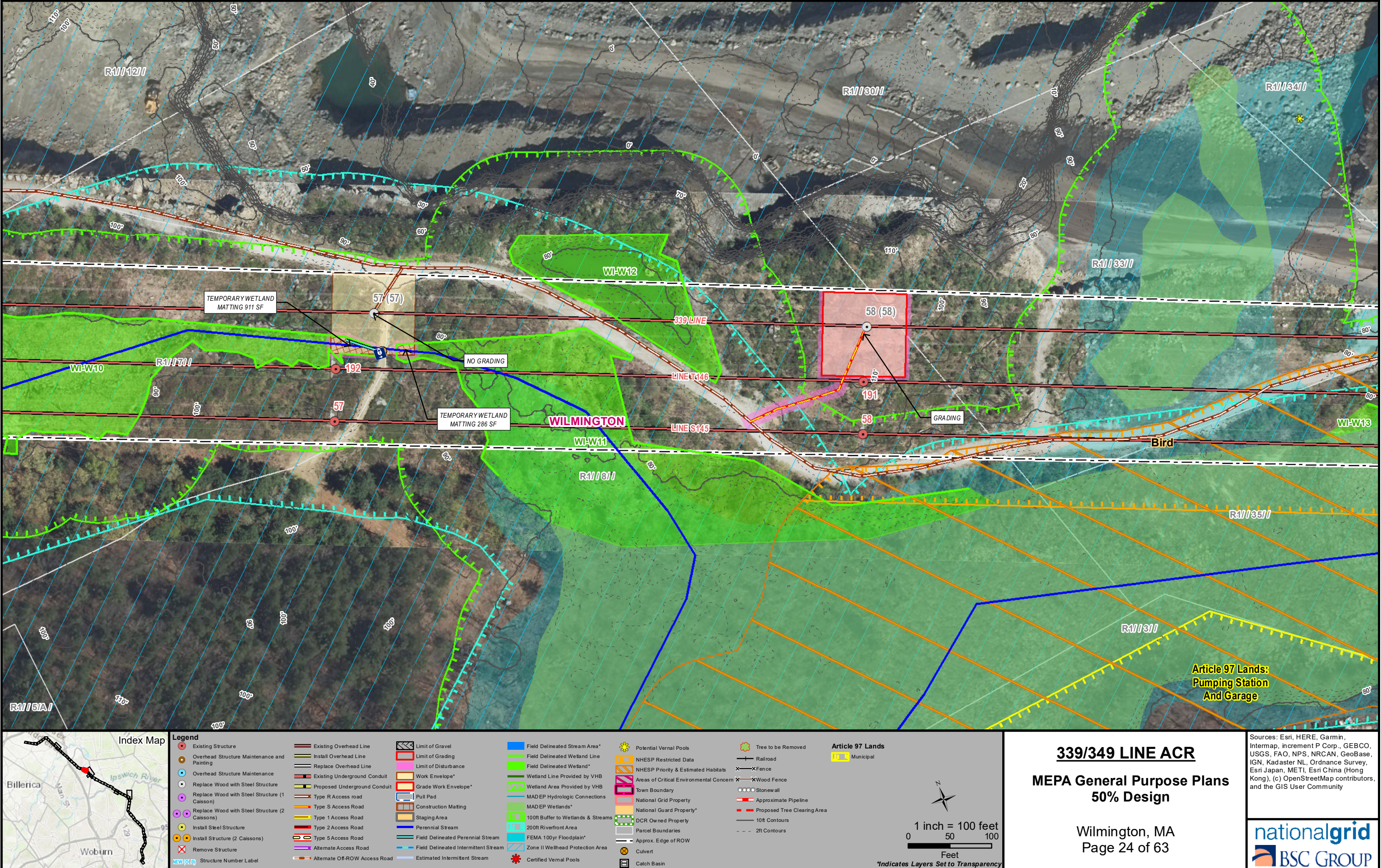
MEPA General Purpose Plans 50% Design

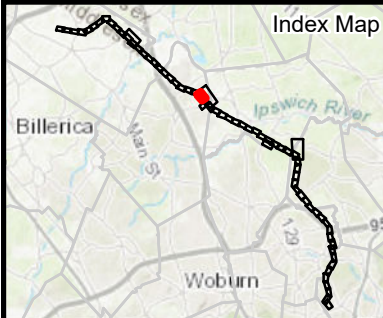
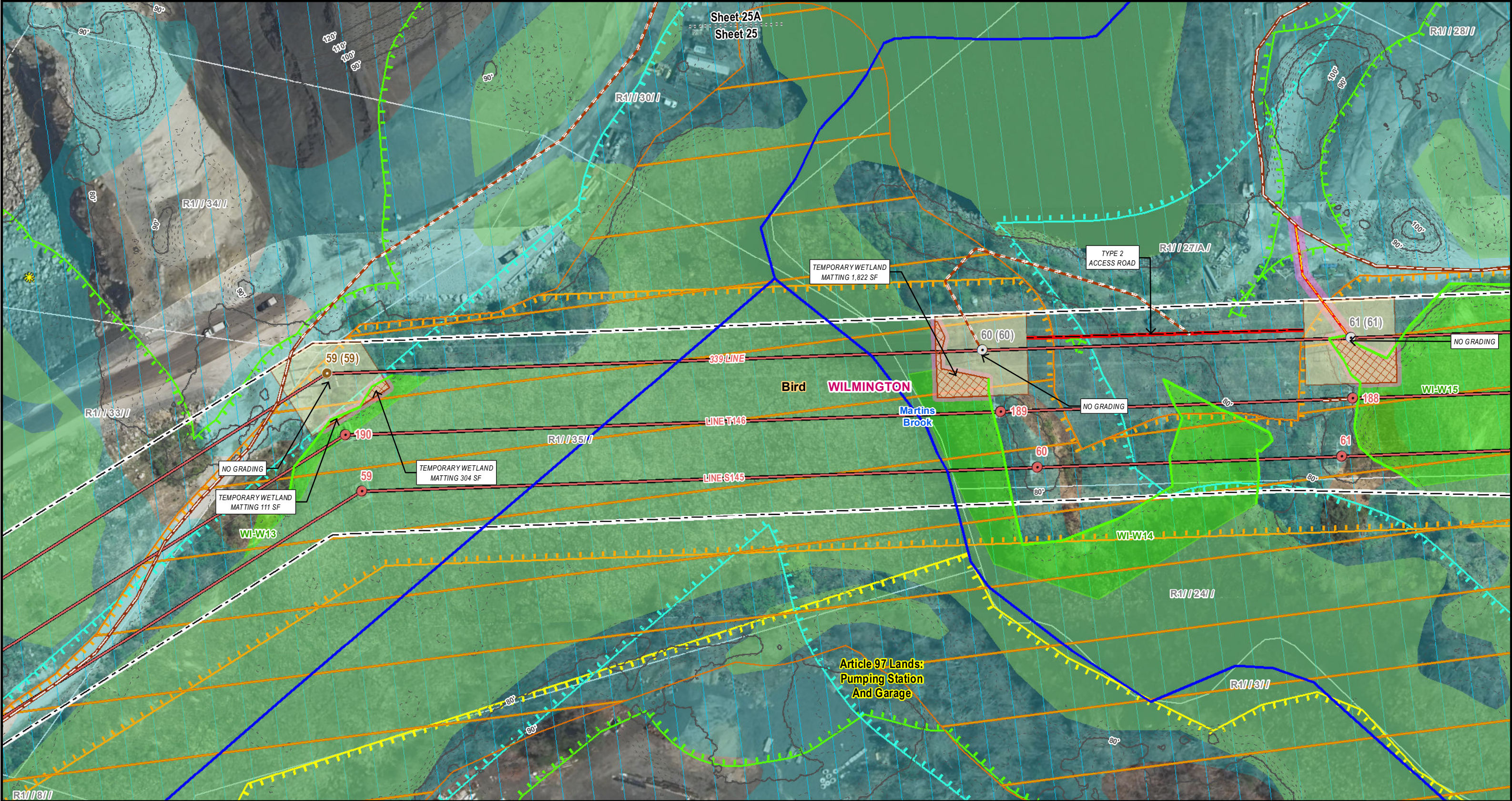
Wilmington, MA
Page 22 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed	Article 97 Lands Municipal
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad	
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence	Approximate Pipeline
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence	
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall	10ft Contours
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property		2ft Contours
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*		
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property		
Remove Structure	Type 2 Access Road		200ft Riverfront Area	Parcel Boundaries		
	Type 5 Access Road		FEMA 100yr Floodplain*	Approx. Edge of ROW		
	Alternate Access Road		Zone II Wetland Protection Area	Culvert		
	Alternate Off-ROW Access Road		Estimated Intermittent Stream	Catch Basin		
			Certified Vernal Pools			

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

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MEPA General Purpose Plans

50% Design

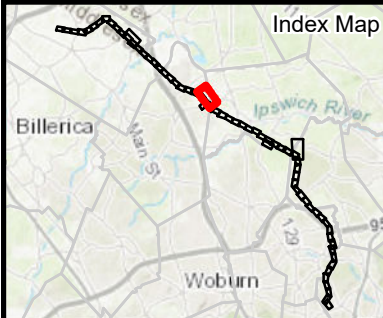
Wilmington, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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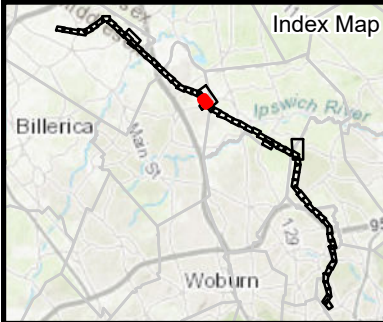
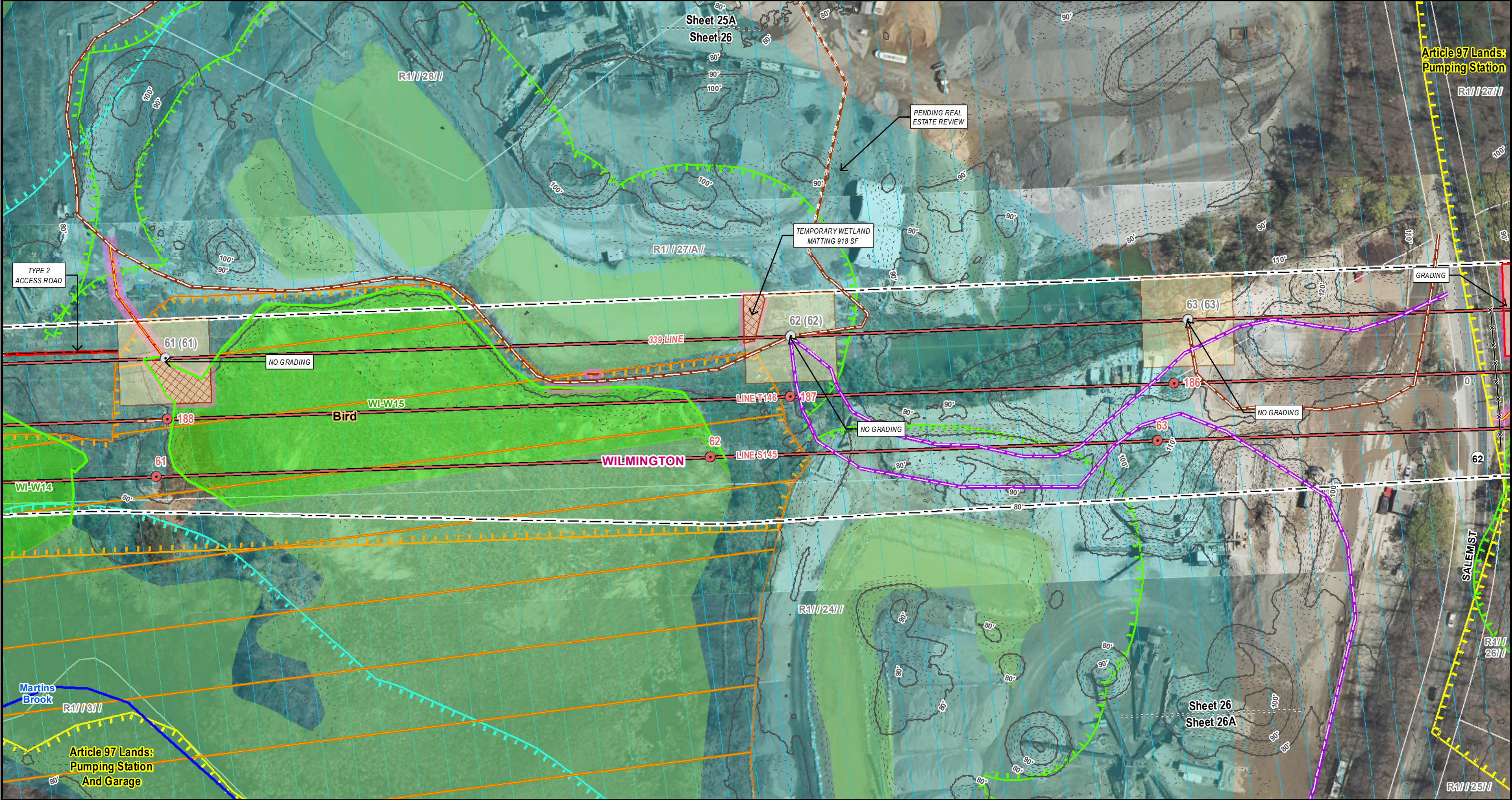
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MEPA General Purpose Plans
50% Design
Wilmington & North Reading, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend	Legend	Legend	Legend	Legend	Legend
<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access roadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wetland Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceX Wood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft ContoursArticle 97 LandsMunicipal

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MEPA General Purpose Plans

50% Design

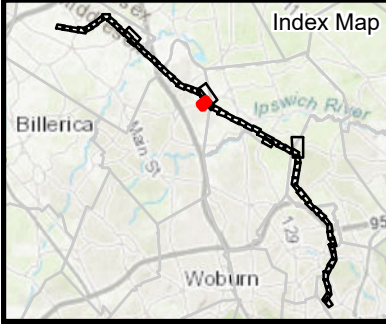
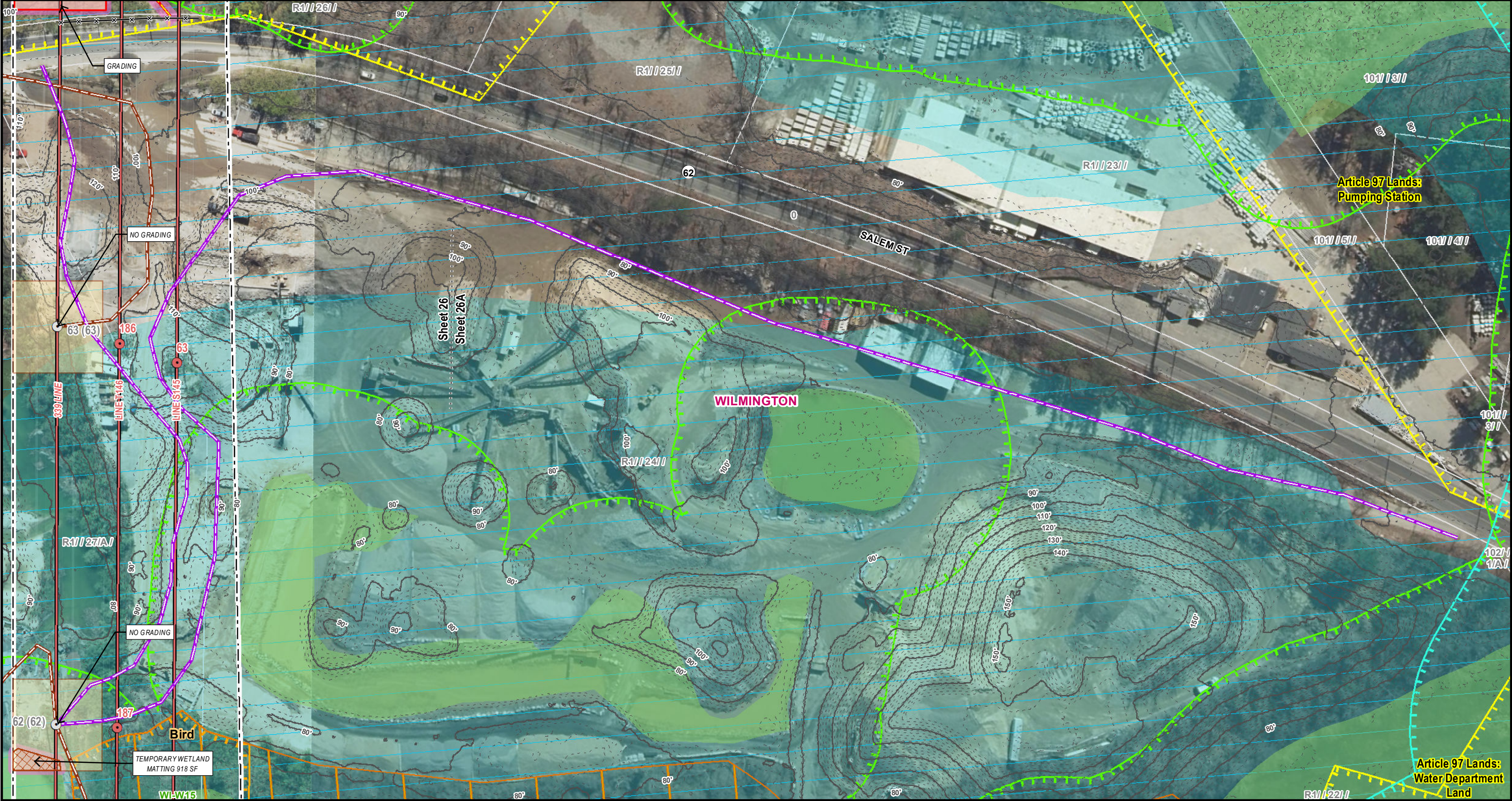
Wilmington, MA

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed	Article 97 Lands Municipal
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Disturbance	Field Delineated Wetland Line	NHESP Restricted Data	Railroad	
Overhead Structure Maintenance	Replace Overhead Line	Work Envelope*	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	Fence	
Replace Wood with Steel Structure	Existing Underground Conduit	Grade Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	Wood Fence	
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Pull Pad	Wetland Area Provided by VHB	Town Boundary	Stonewall	
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Construction Matting	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline	
Install Steel Structure	Type S Access Road	Staging Area	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area	
Install Structure (2 Caissons)	Type 1 Access Road	Perennial Stream	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours	
Remove Structure	Type 2 Access Road	Field Delineated Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours	
Structure Number Label	Type 5 Access Road	Field Delineated Intermittent Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW		
	Alternate Access Road	Estimated Intermittent Stream	Zone II Wellhead Protection Area	Culvert		
	Alternate Off-ROW Access Road		Certified Vernal Pools	Catch Basin		

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

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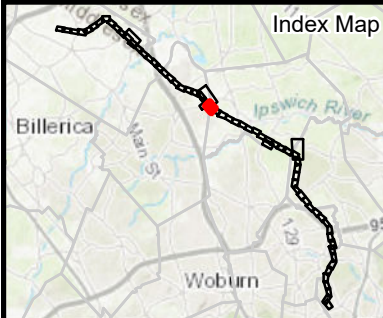
Wilmington, MA

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Municipal

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

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MEPA General Purpose Plans

50% Design

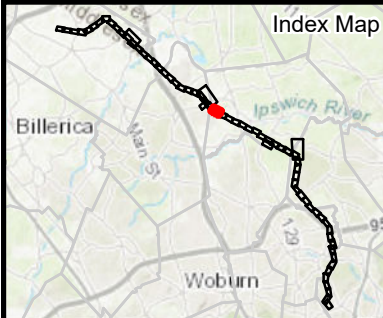
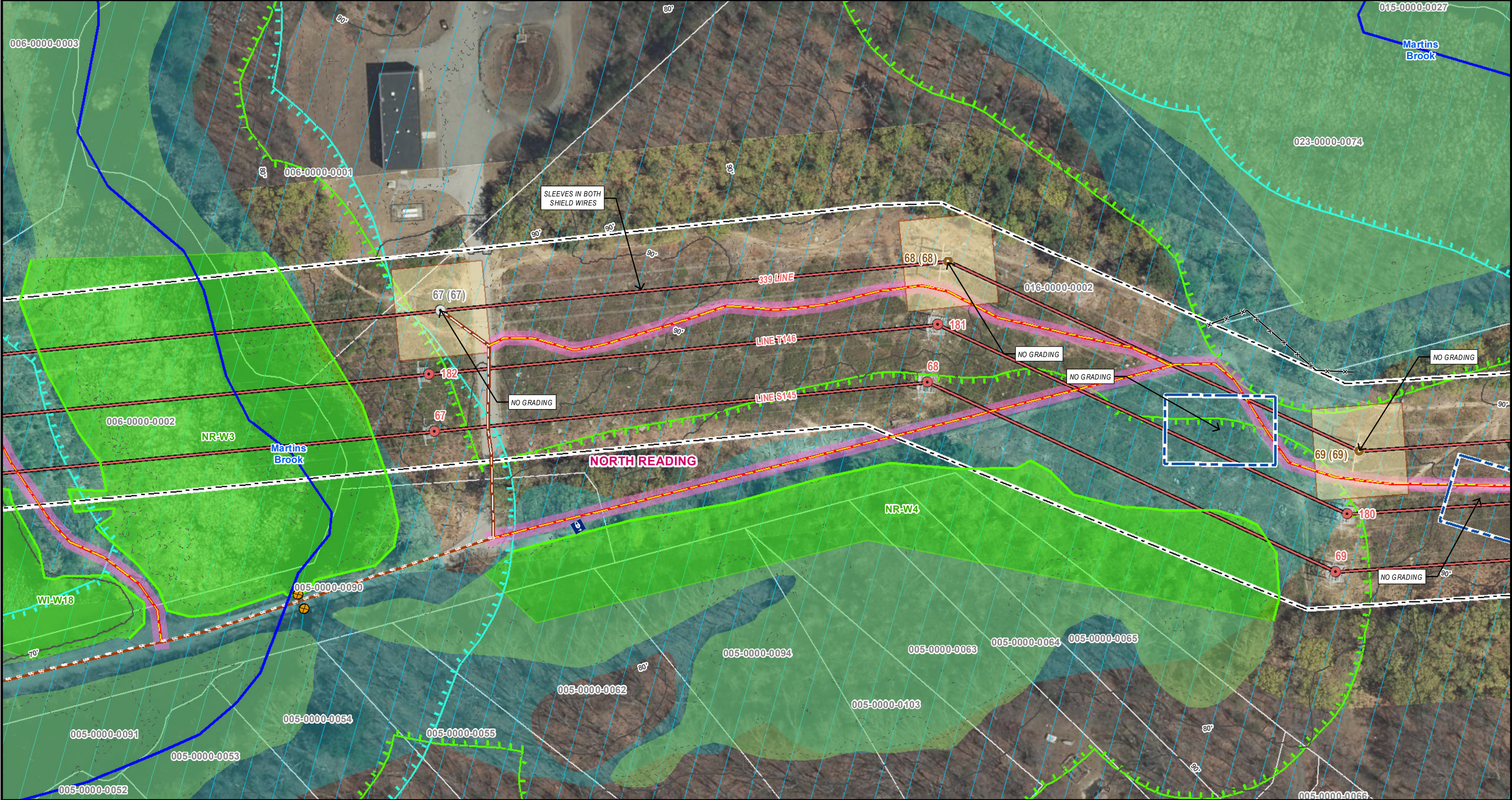
Wilmington & North Reading, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceX Wood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

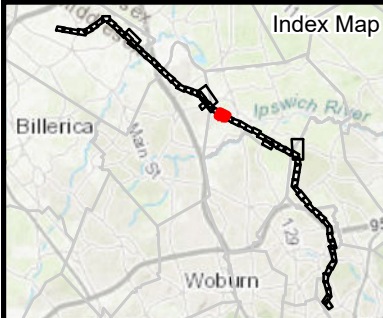
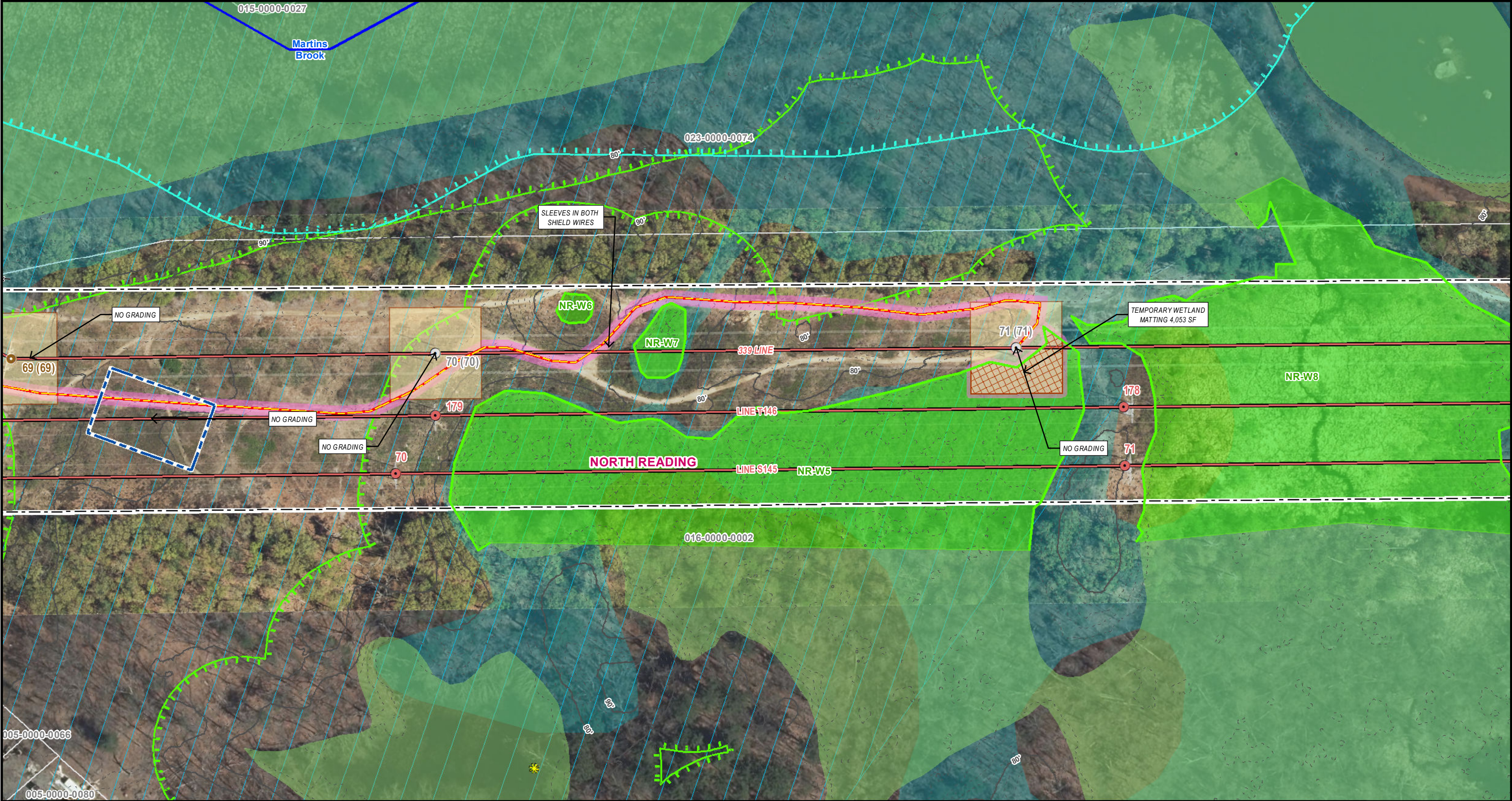
North Reading, MA

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1 inch = 100 feet

0 50 100

Feet

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339/349 LINE ACR

MEPA General Purpose Plans

50% Design

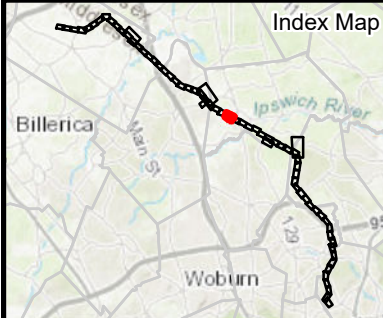
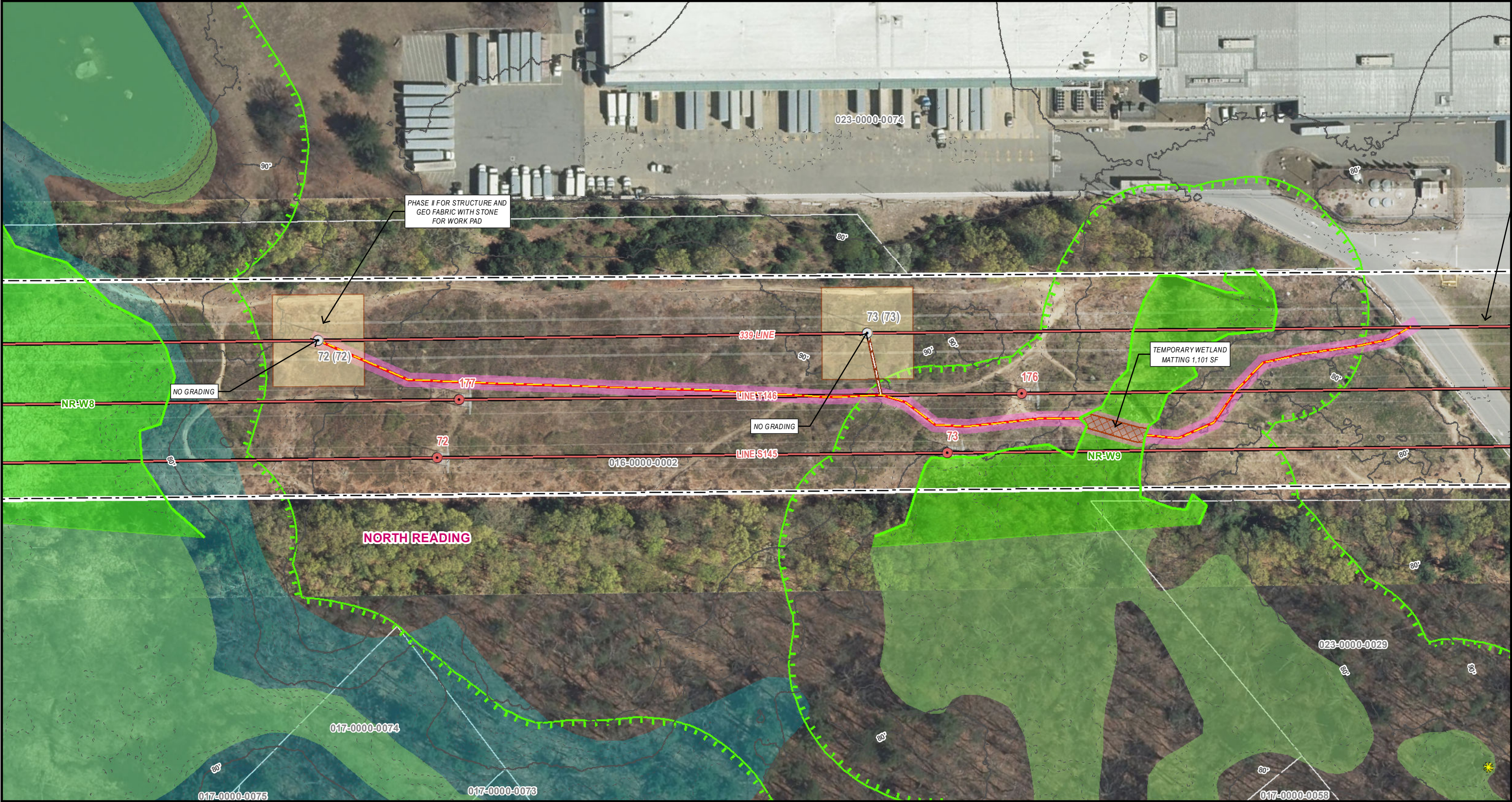
North Reading, MA

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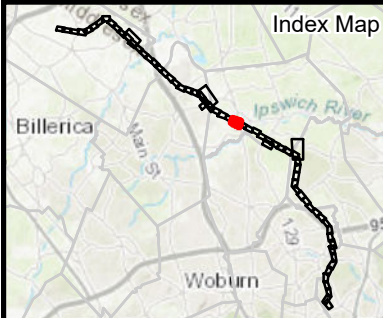
North Reading, MA

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Article 97 Lands

- Municipal

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339/349 LINE ACR

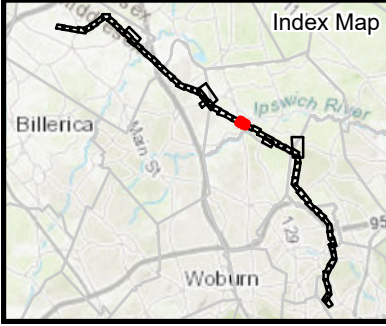
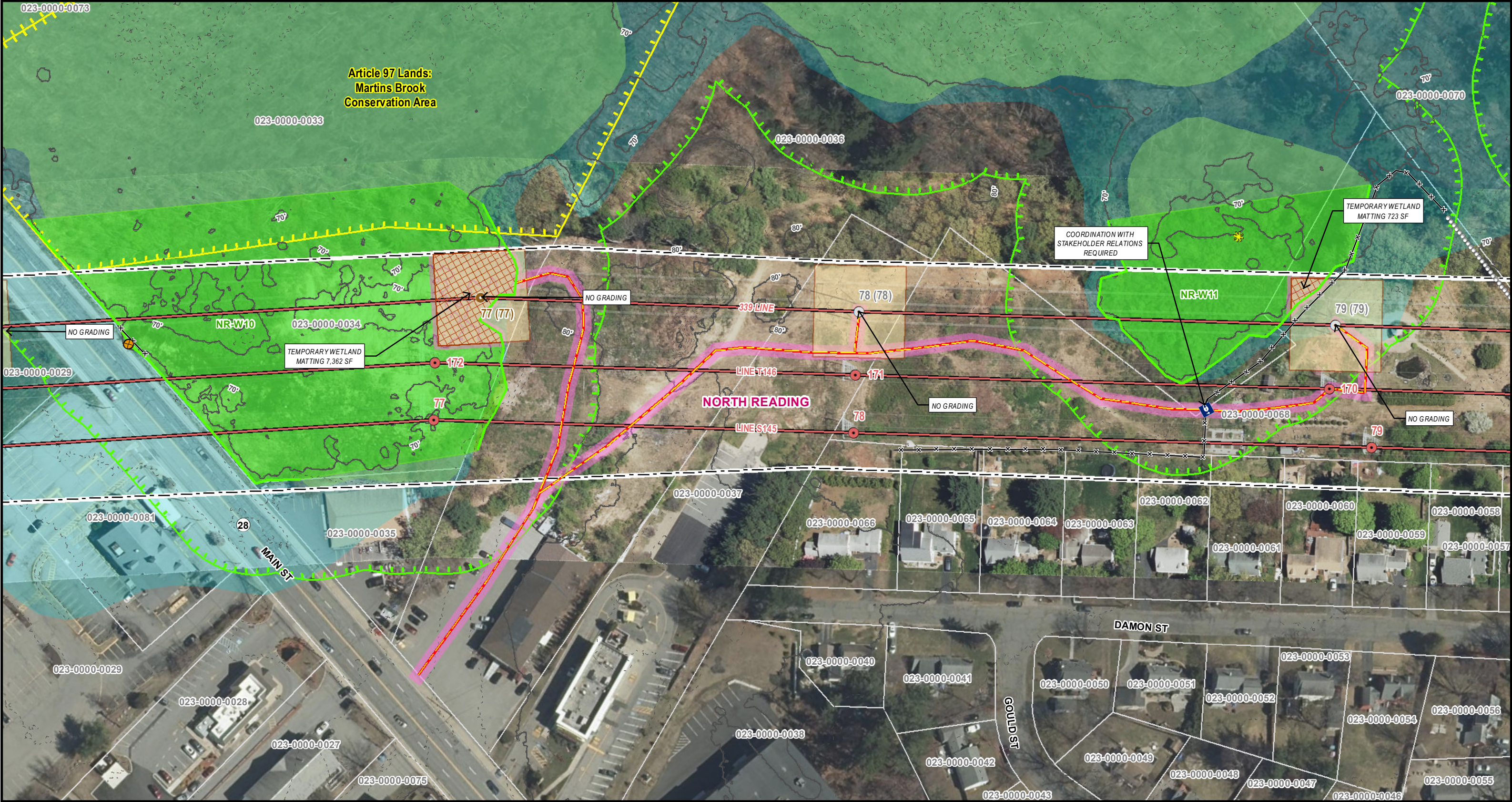
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North Reading, MA

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339/349 LINE ACR

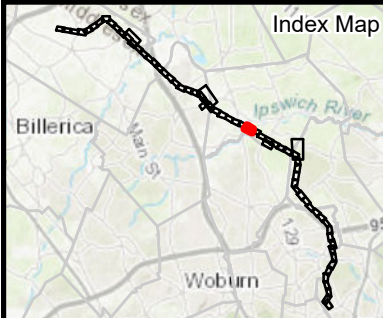
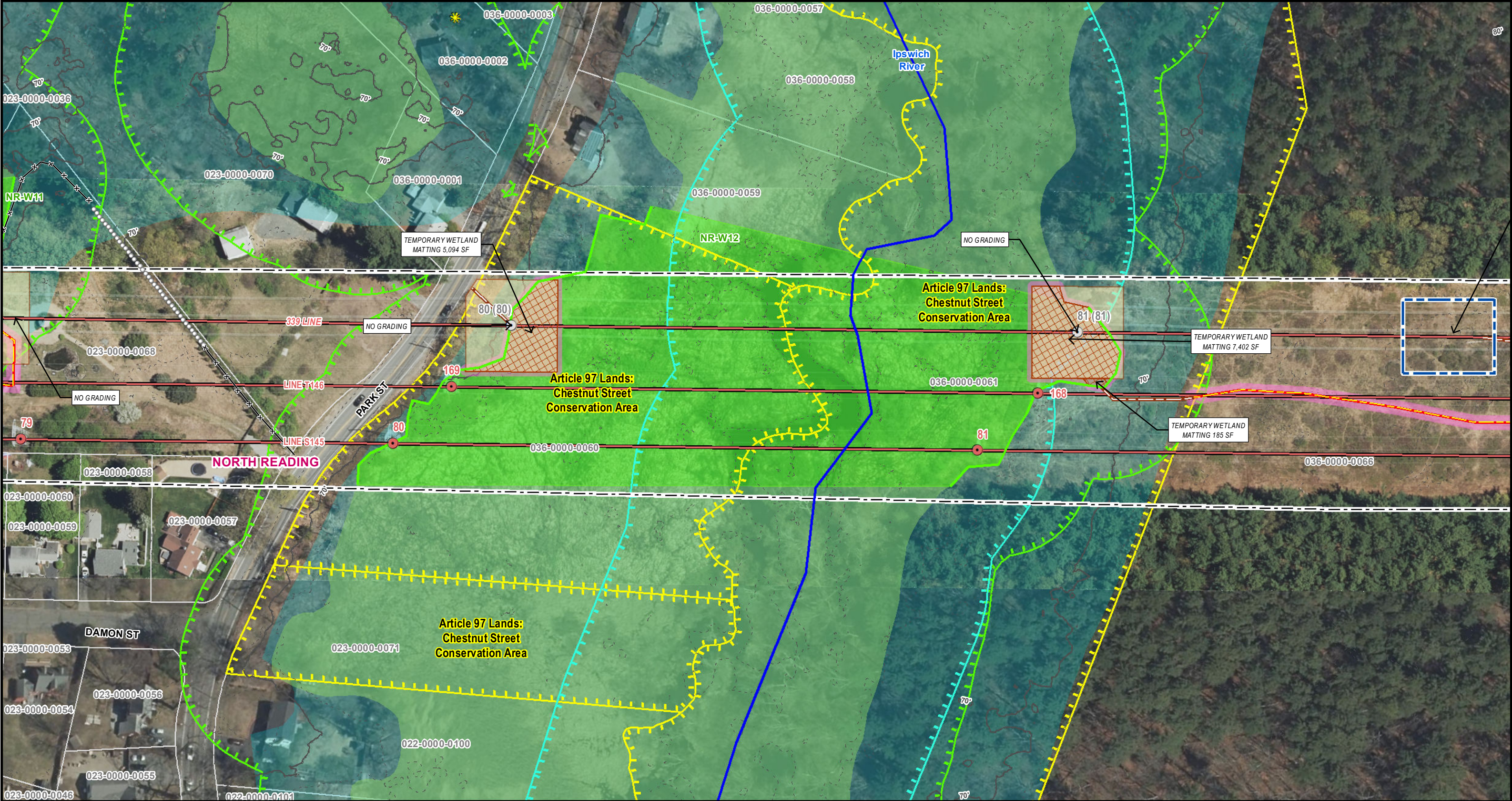
MEPA General Purpose Plans

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Article 97 Lands

- Municipal

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339/349 LINE ACR

MEPA General Purpose Plans

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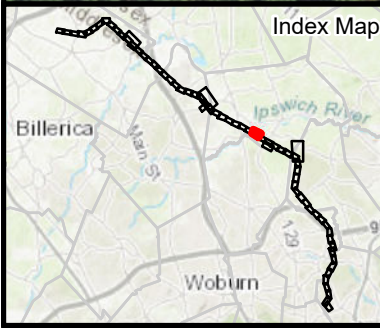
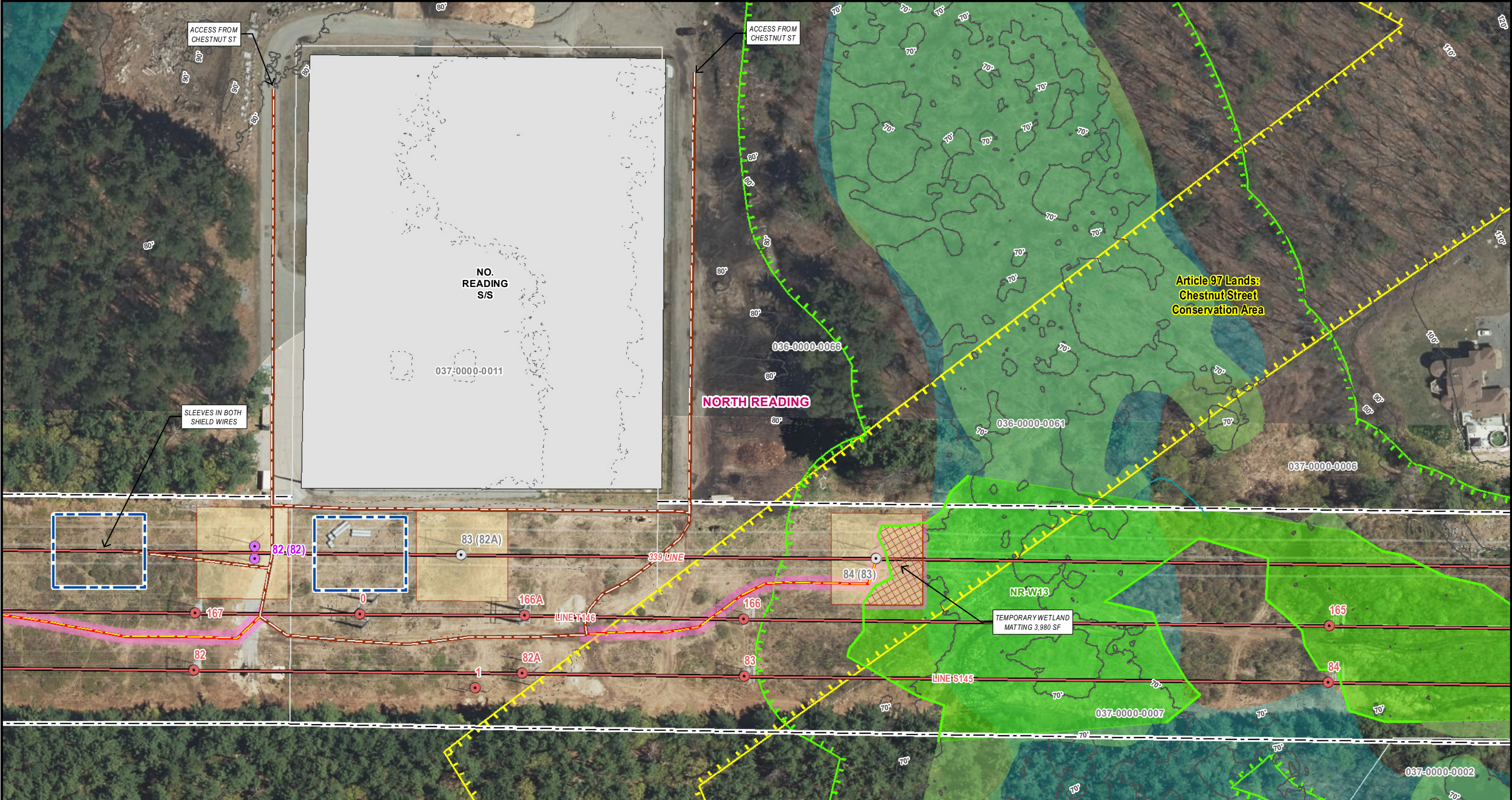
North Reading, MA

Page 33 of 63

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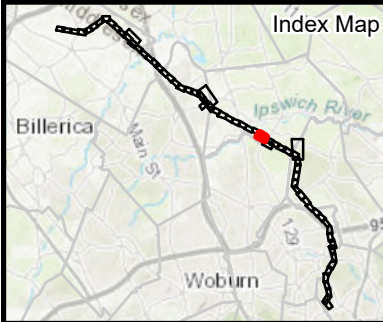
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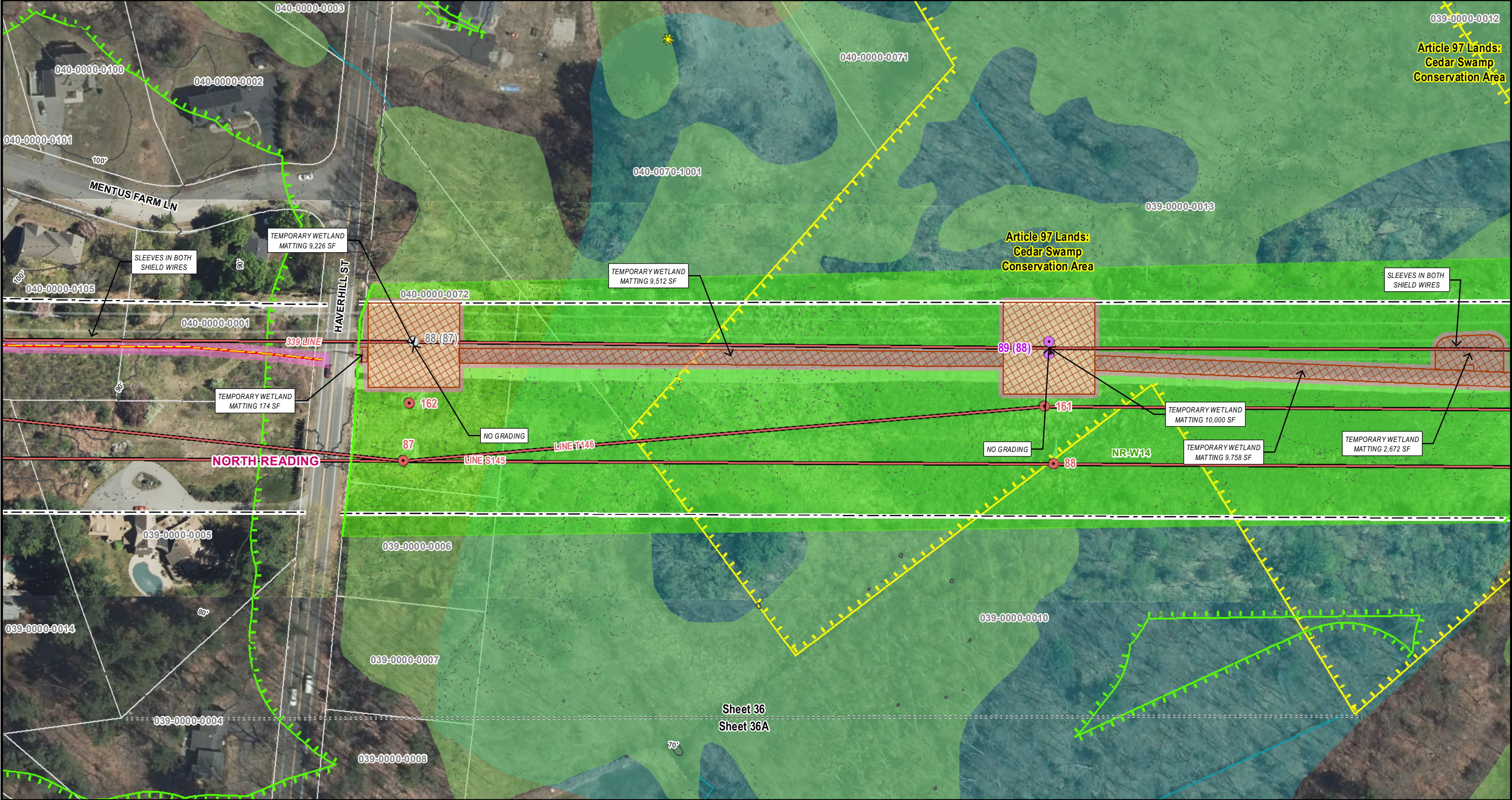
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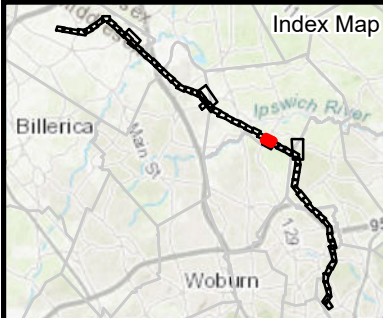
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Sheet 36
Sheet 36A



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MEPA General Purpose Plans

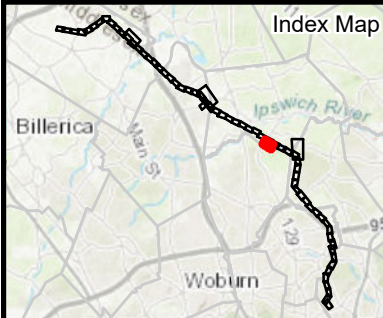
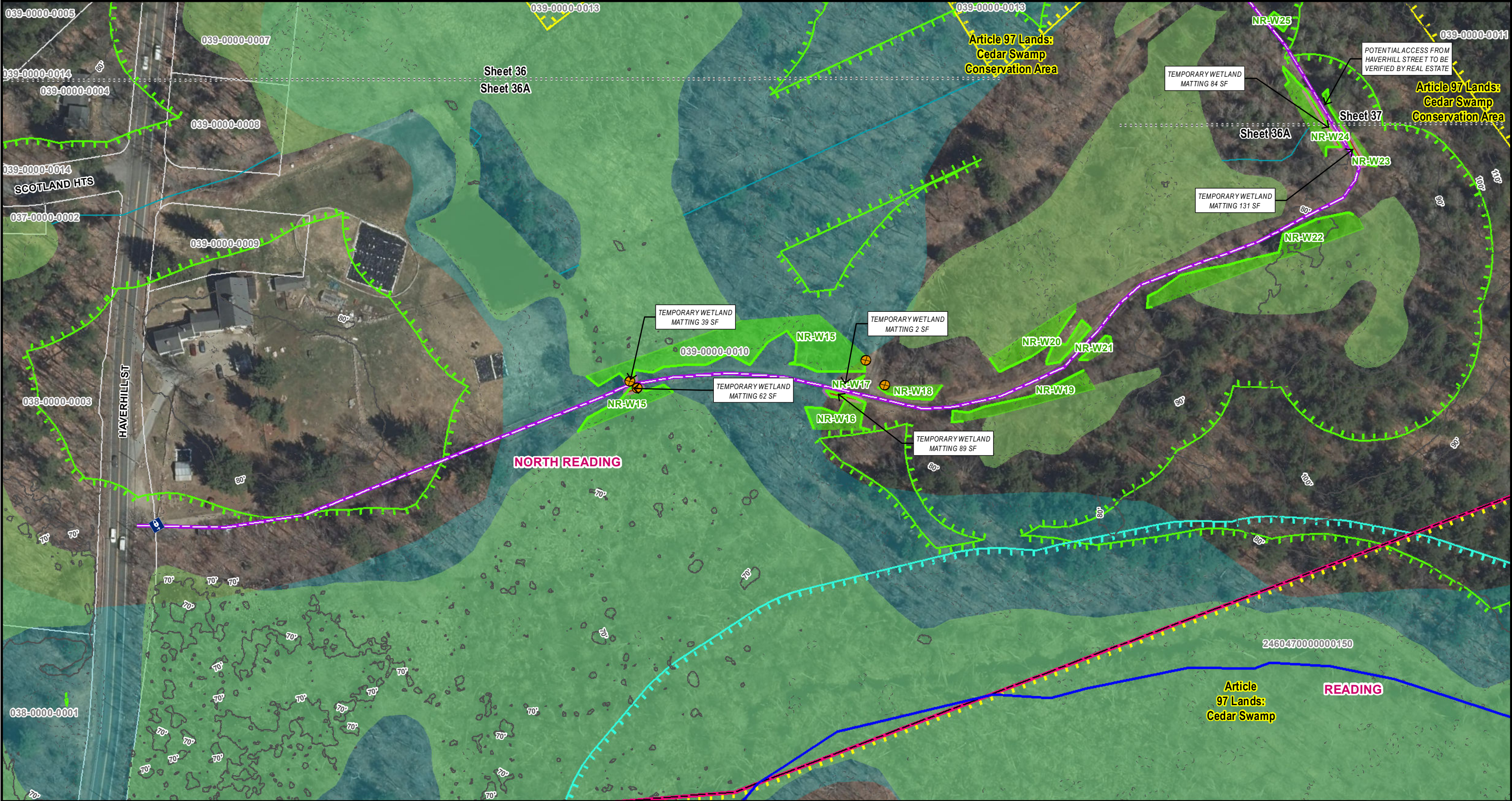
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339/349 LINE ACR

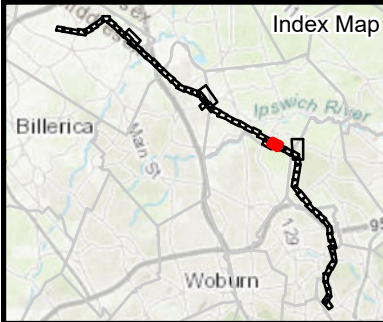
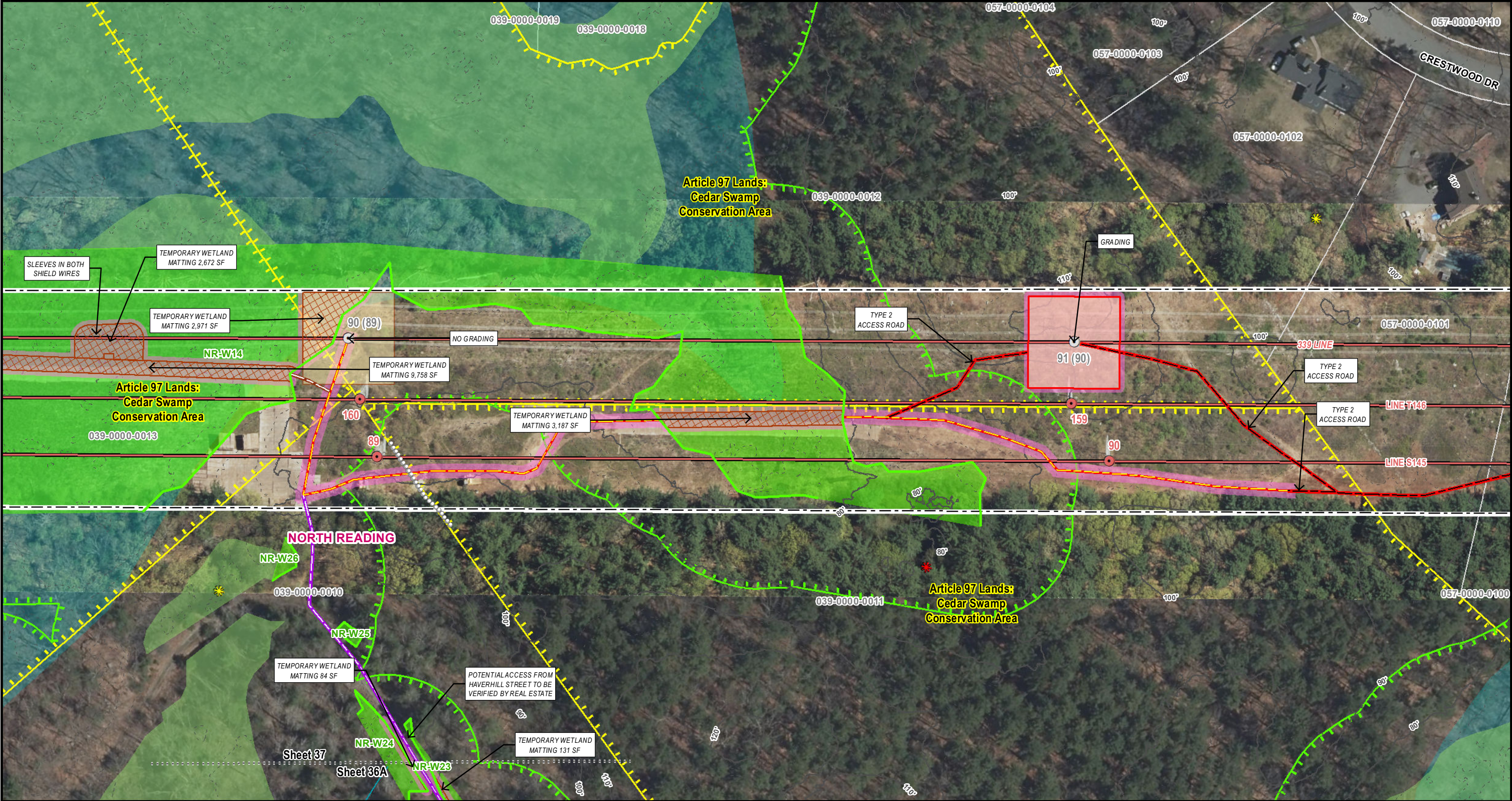
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed	Article 97 Lands Municipal
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Disturbance	Field Delineated Wetland Line	NHESP Restricted Data	Railroad	
Overhead Structure Maintenance	Replace Overhead Line	Work Envelope*	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence	Approximate Pipeline
Replace Wood with Steel Structure	Existing Underground Conduit	Grade Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X-Wood Fence	
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Pull Pad	Wetland Area Provided by VHB	Town Boundary	Stonewall	10ft Contours
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Construction Matting	MAD EP Hydrologic Connections	National Grid Property		2ft Contours
Install Steel Structure	Type S Access Road	Staging Area	MAD EP Wetlands*	National Guard Property*		
Install Steel Structure (2 Caissons)	Type 1 Access Road	Perennial Stream	100ft Buffer to Wetlands & Streams	DCR Owned Property		
Remove Structure	Type 2 Access Road	Field Delineated Perennial Stream	200ft Riverfront Area	Parcel Boundaries		
Structure Number Label	Type 5 Access Road	Field Delineated Intermittent Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW		
	Alternate Access Road	Estimated Intermittent Stream	Zone II Wellhead Protection Area	Culvert		
	Alternate Off-ROW Access Road			Catch Basin		

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

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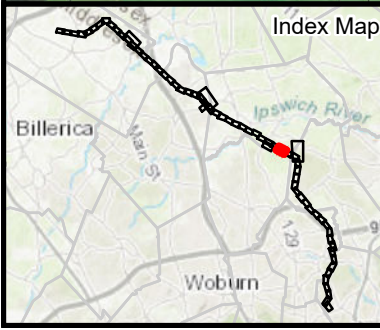
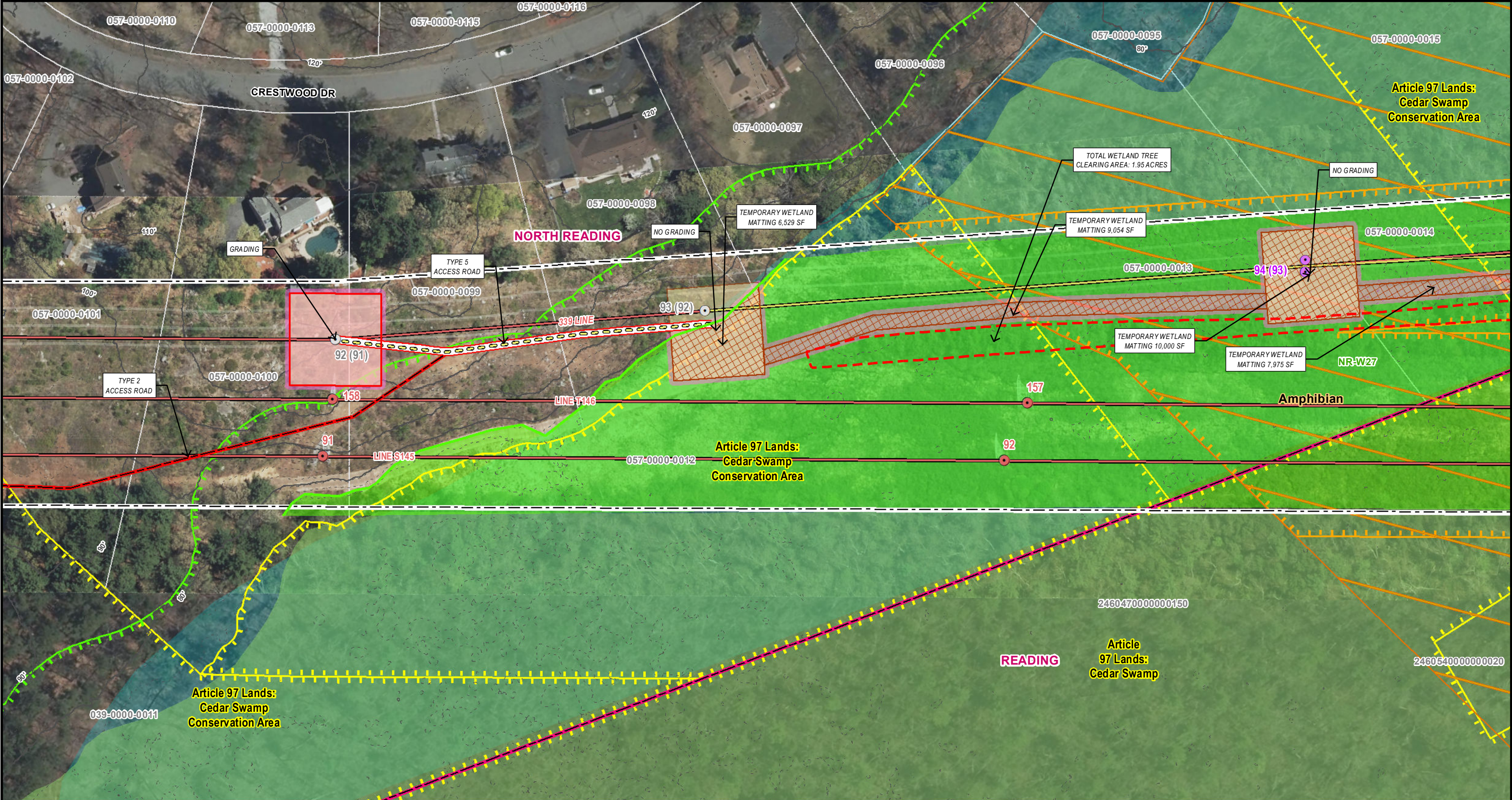
North Reading, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours	<ul style="list-style-type: none">Article 97 LandsMunicipal
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1 inch = 100 feet
0 50 100 Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR

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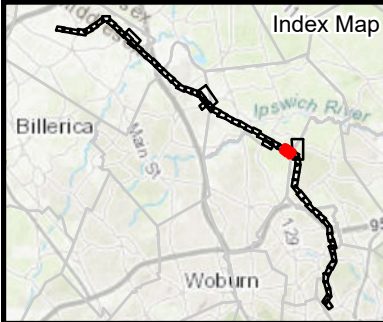
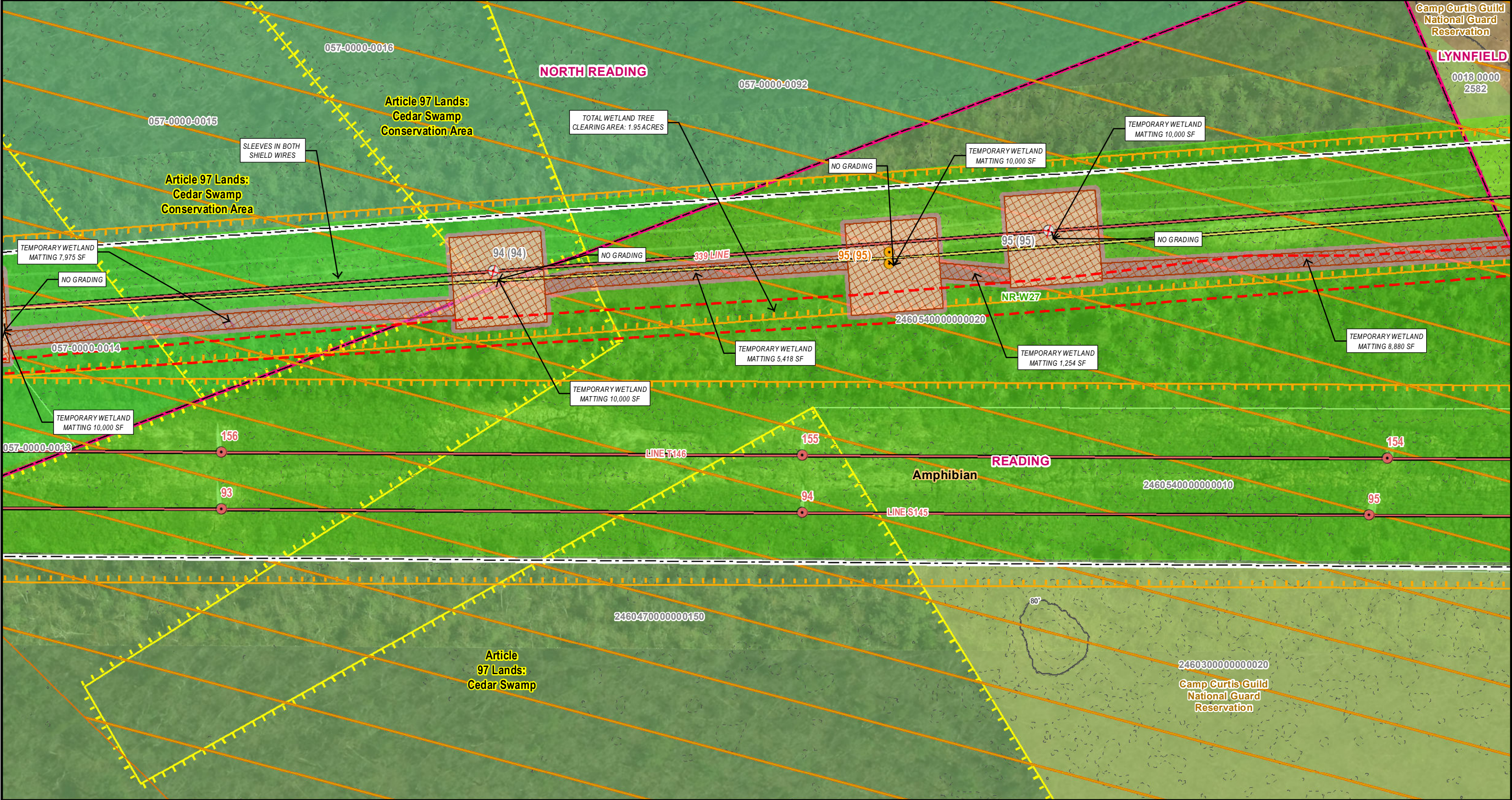
North Reading & Reading, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X Fence
- X Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Municipal

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

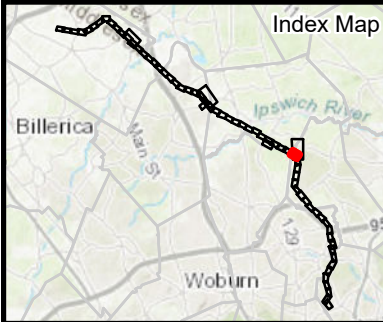
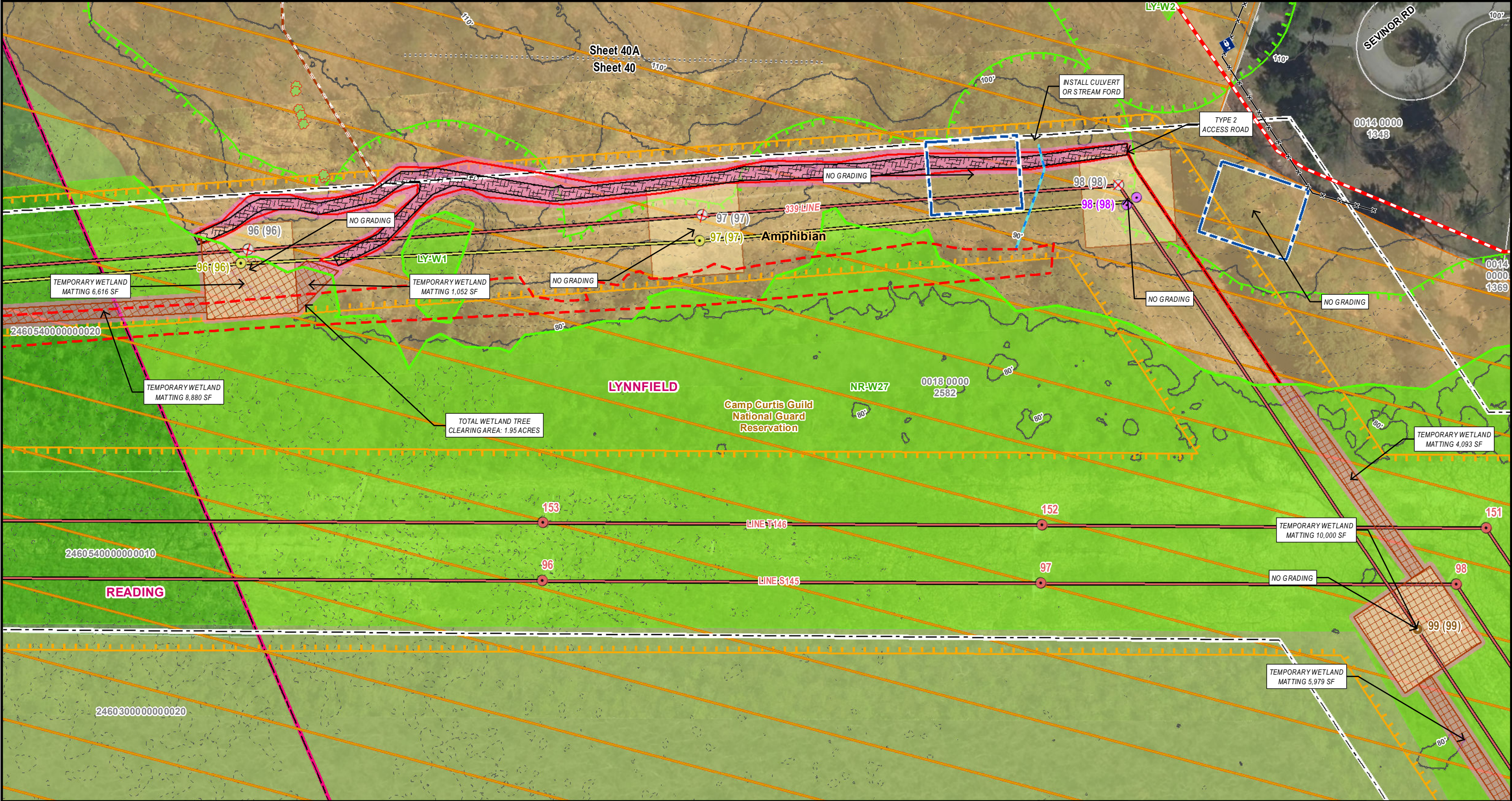
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X-Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Structure Number Label	Alternate Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Off-ROW Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
		Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

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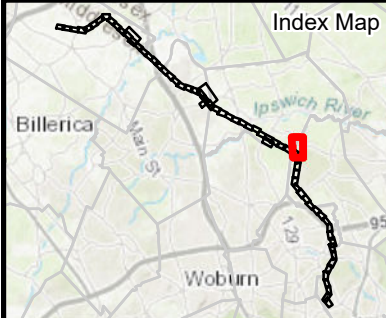
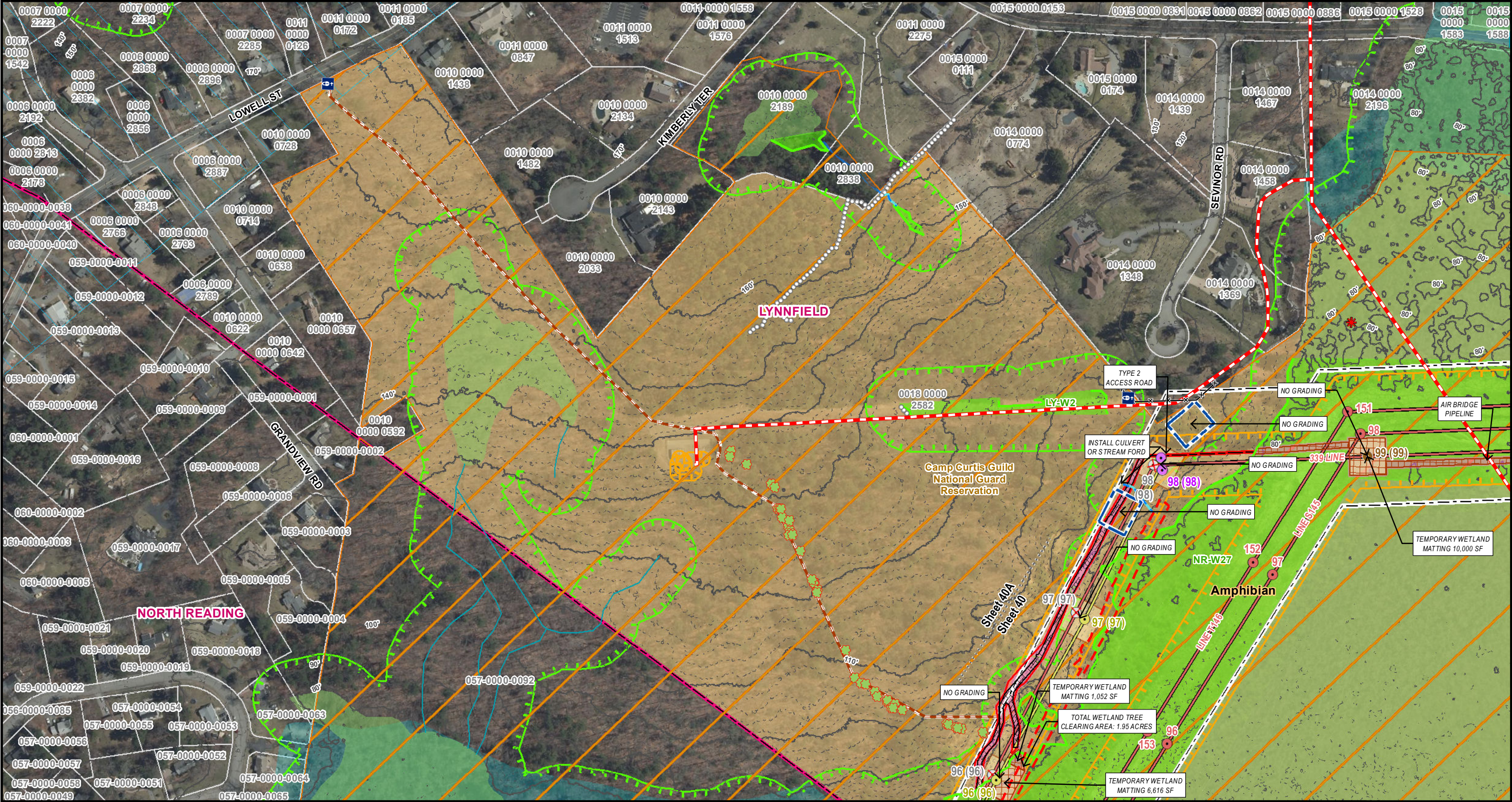
Reading & Lynnfield, MA

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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wetland Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceX Wood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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1 inch = 250 feet
0 125 250 Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR

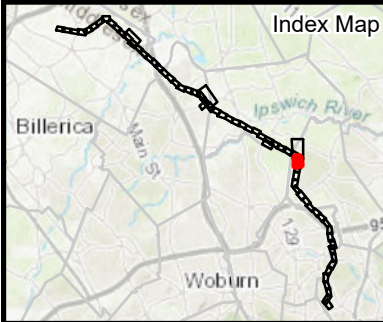
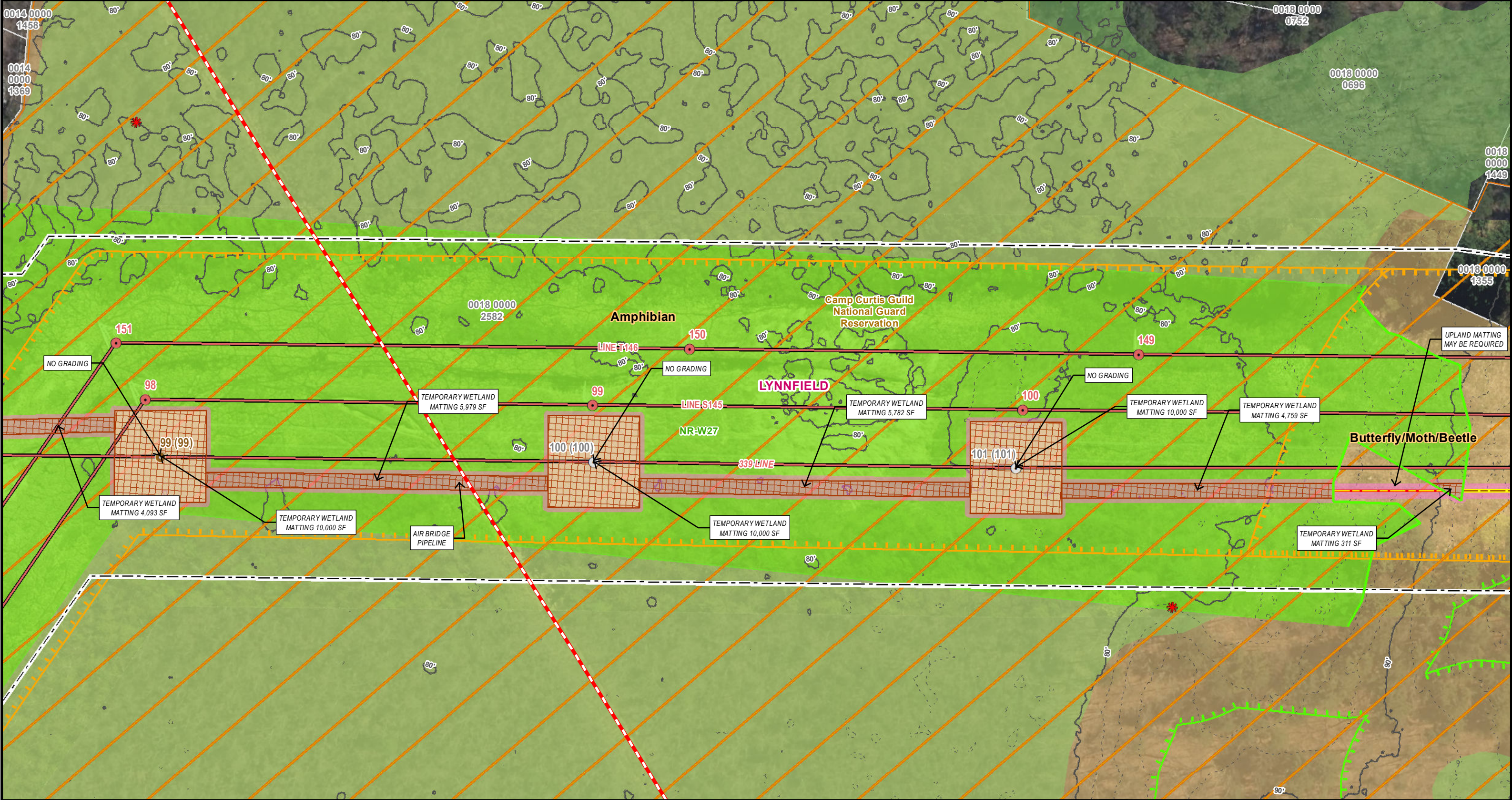
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Legend					
Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Disturbance	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Work Envelope*	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Grade Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X-Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Pull Pad	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Construction Matting	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Staging Area	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Perennial Stream	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Parcel Boundaries	2ft Contours
Structure Number Label	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Approx. Edge of ROW	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Culvert	
				Catch Basin	

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MEPA General Purpose Plans

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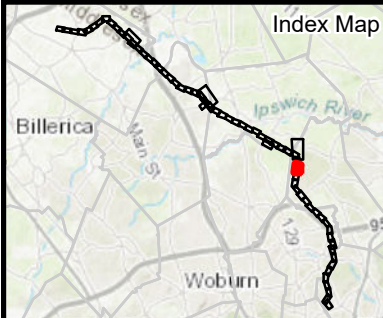
1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Structure Number Label	Alternate Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Off-ROW Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
		Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

1 inch = 100 feet

0 50 100 Feet

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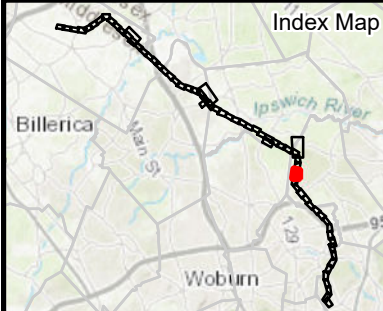
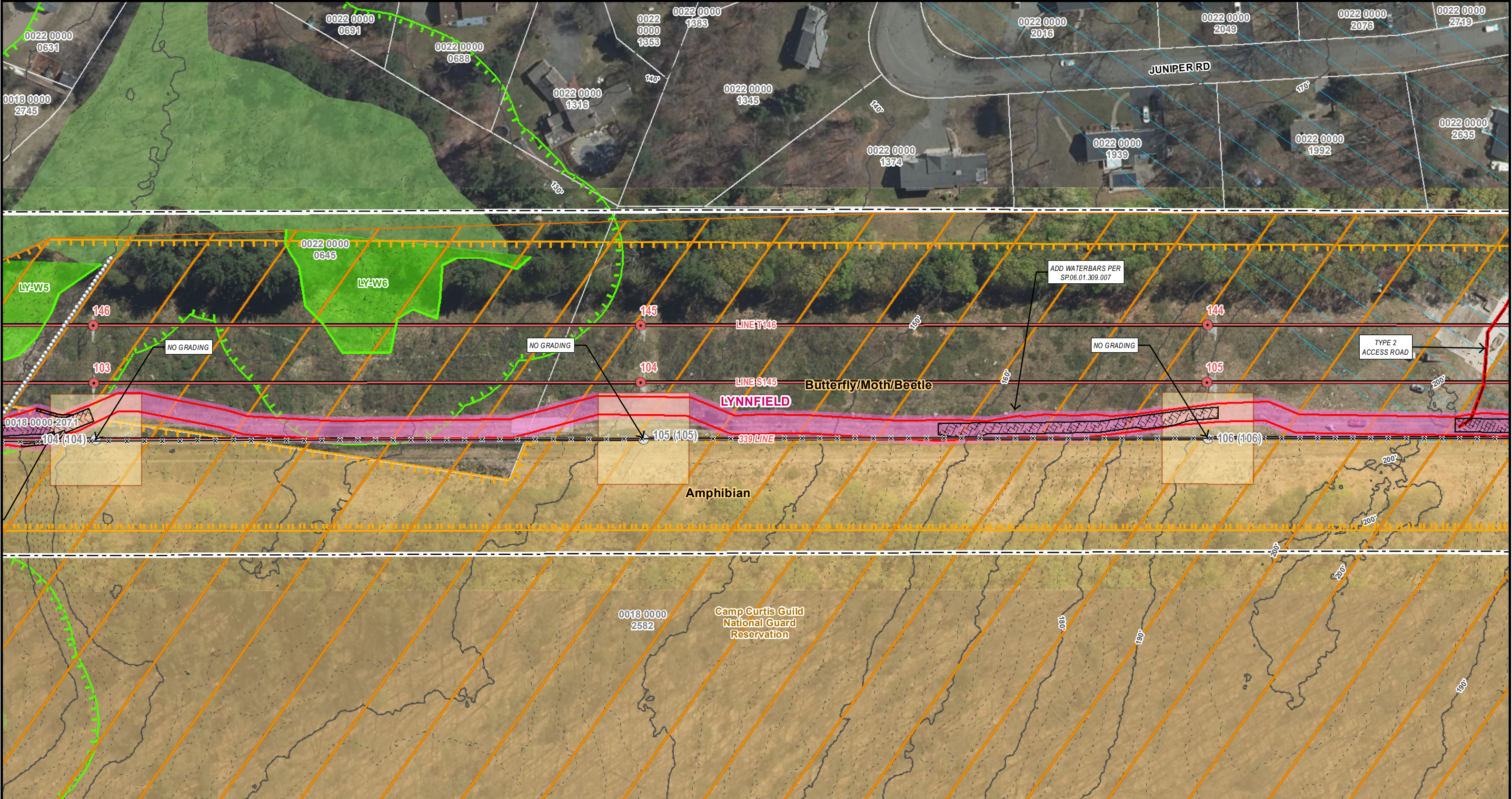
Lynnfield, MA

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Replace Wood with Steel Structure (2 Caissons)	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Steel Structure	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Install Steel Structure (2 Caissons)	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Remove Structure	Type 3 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

Scale: 1 inch = 100 feet
0 50 100 Feet

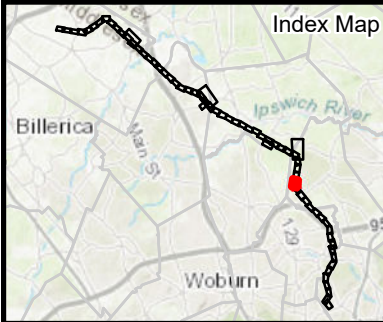
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MEPA General Purpose Plans
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Lynnfield, MA
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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access Road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

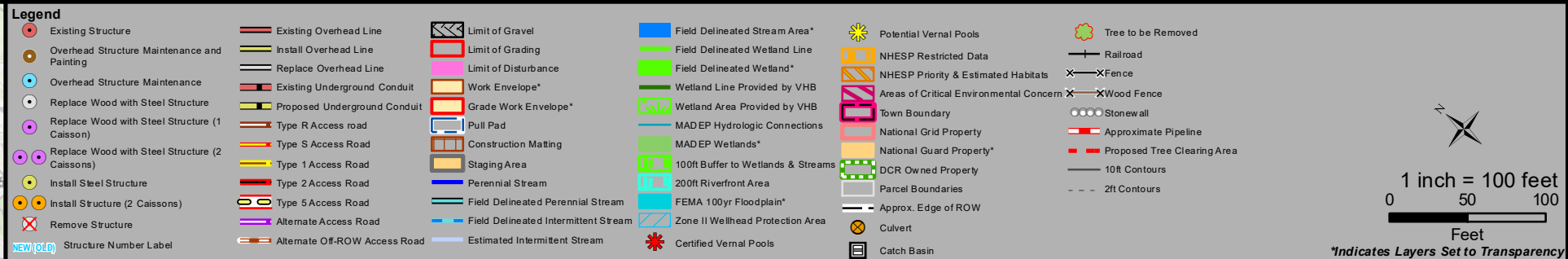
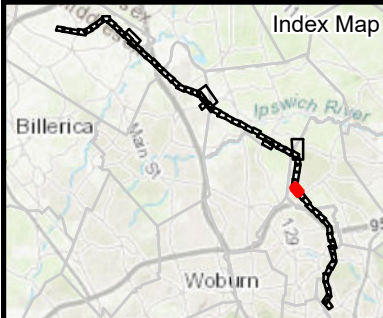
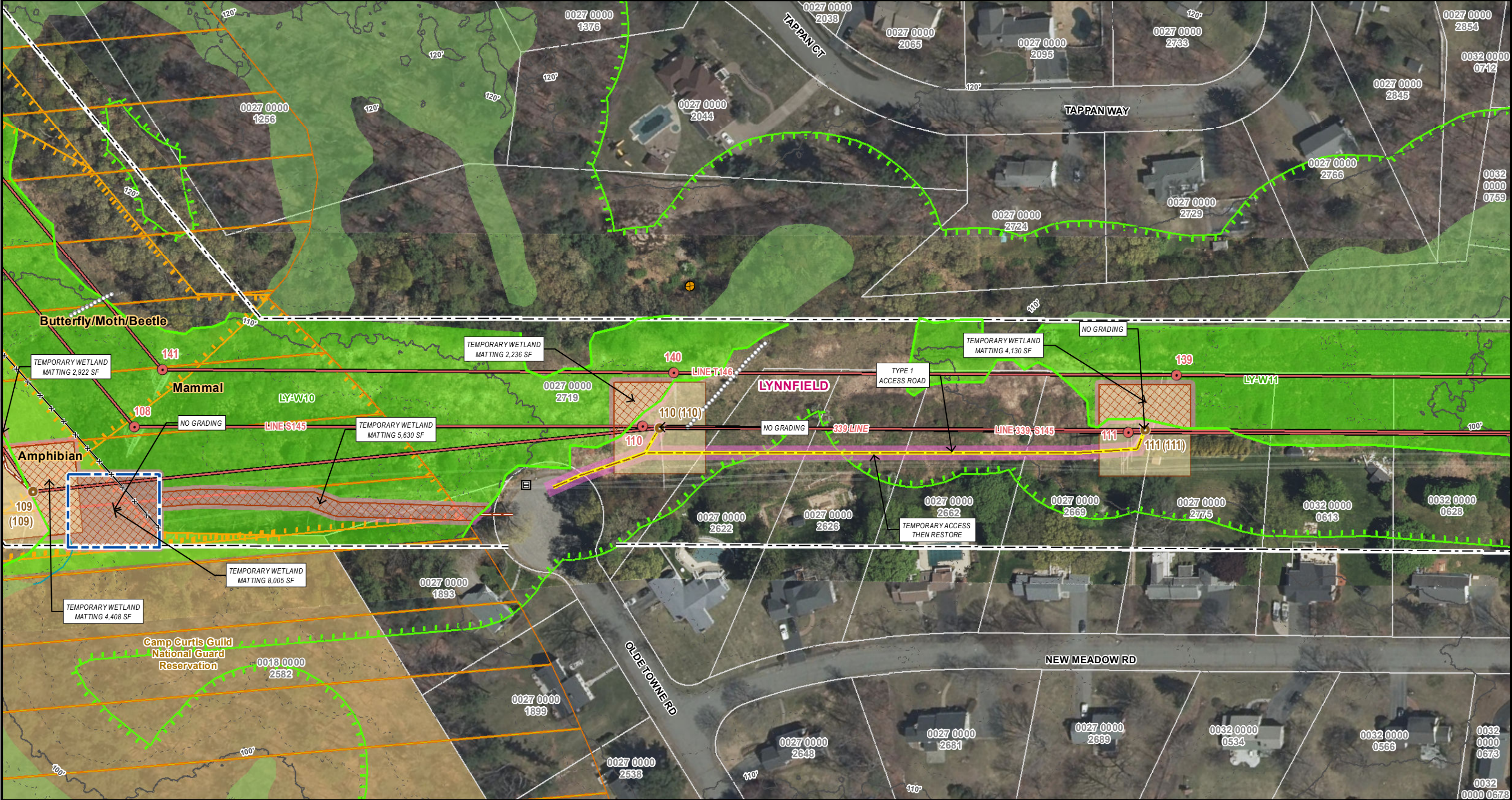
Lynnfield, MA

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MEPA General Purpose Plans

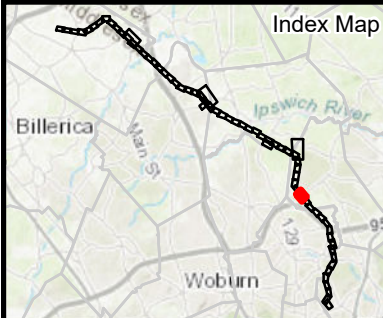
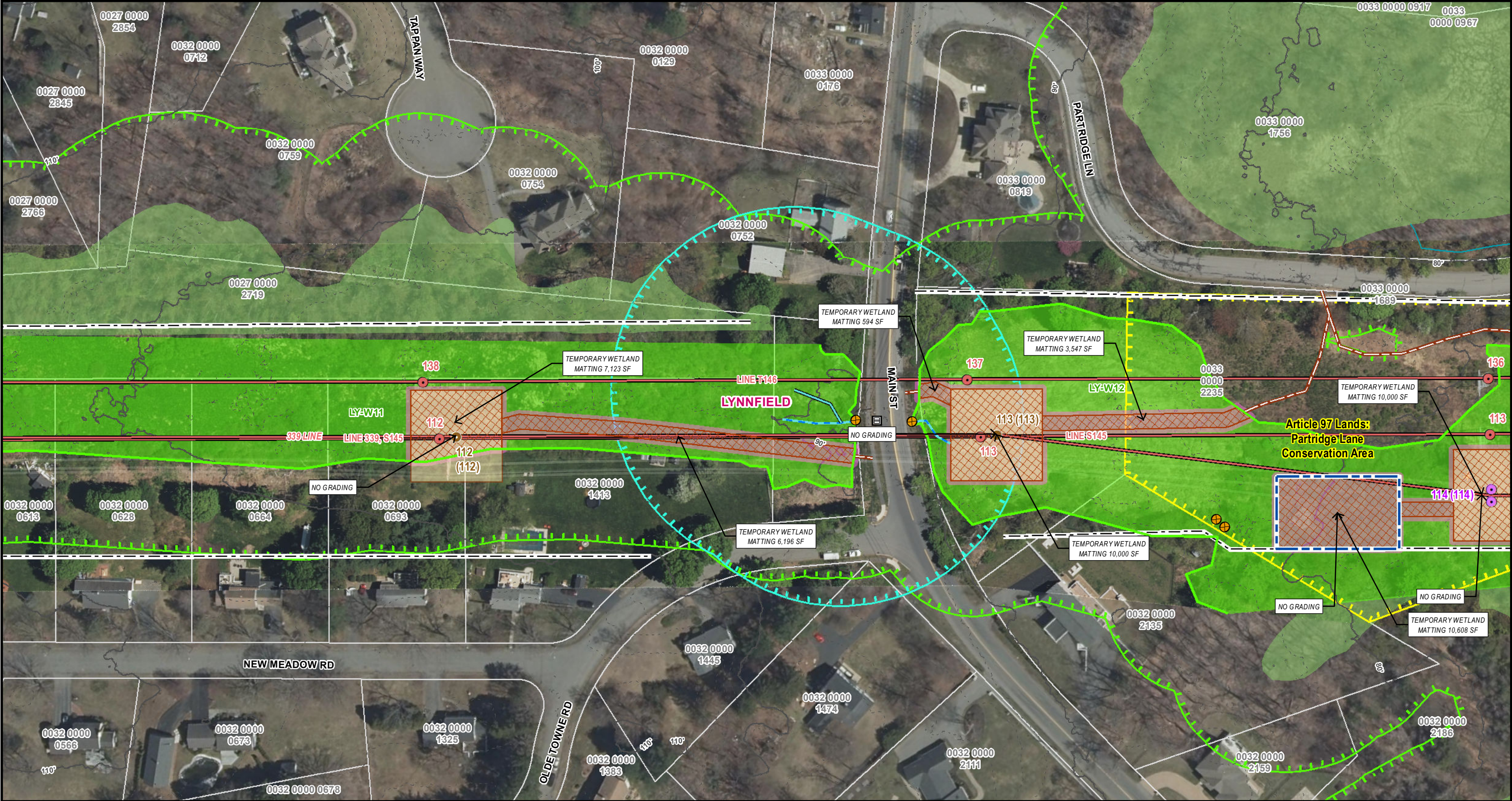
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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access Road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X-Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Municipal

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

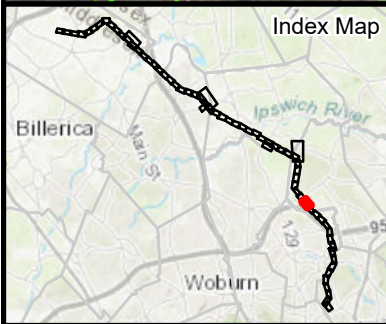
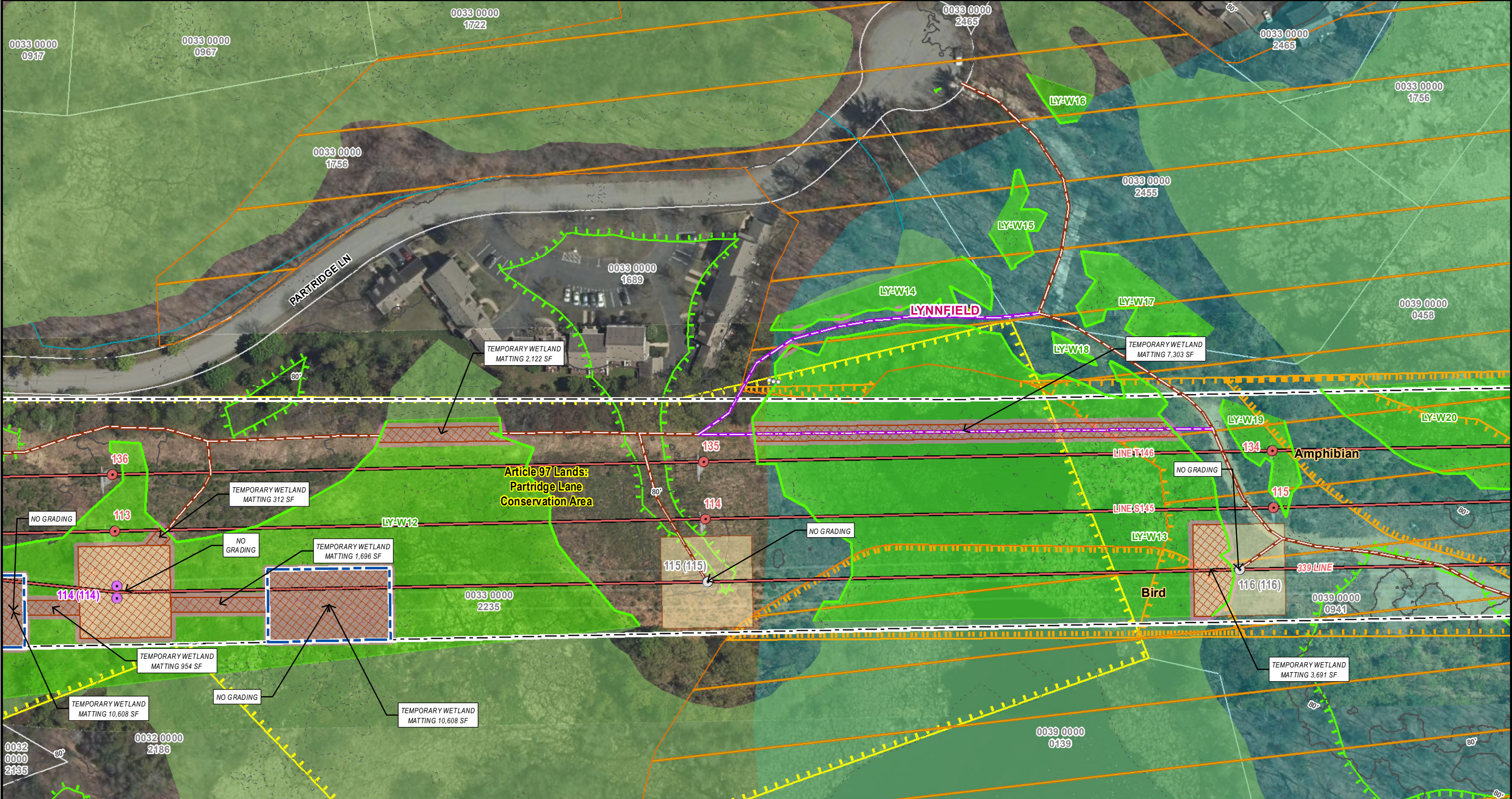
Lynnfield, MA

Page 46 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access Road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X-Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Municipal

1 inch = 100 feet
0 50 100
Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

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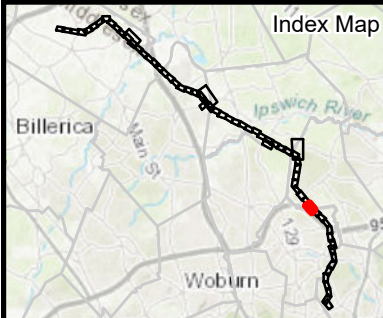
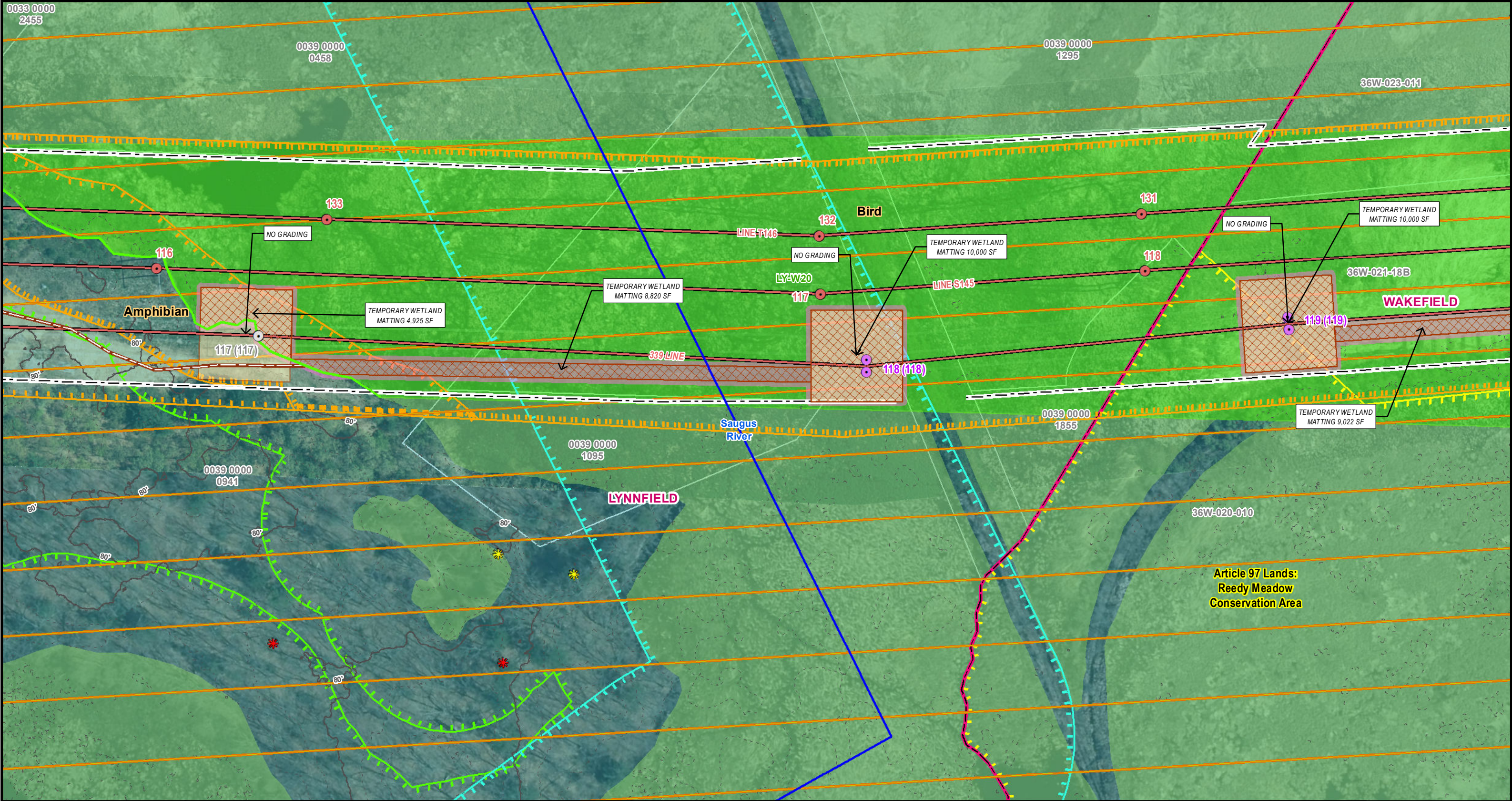
Lynnfield, MA

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Legend	Legend	Legend	Legend	Legend	Legend
Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X-Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access Road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Structure Number Label	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

339/349 LINE ACR

MEPA General Purpose Plans

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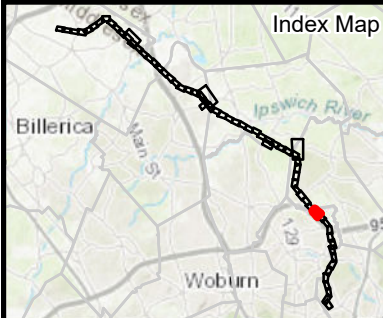
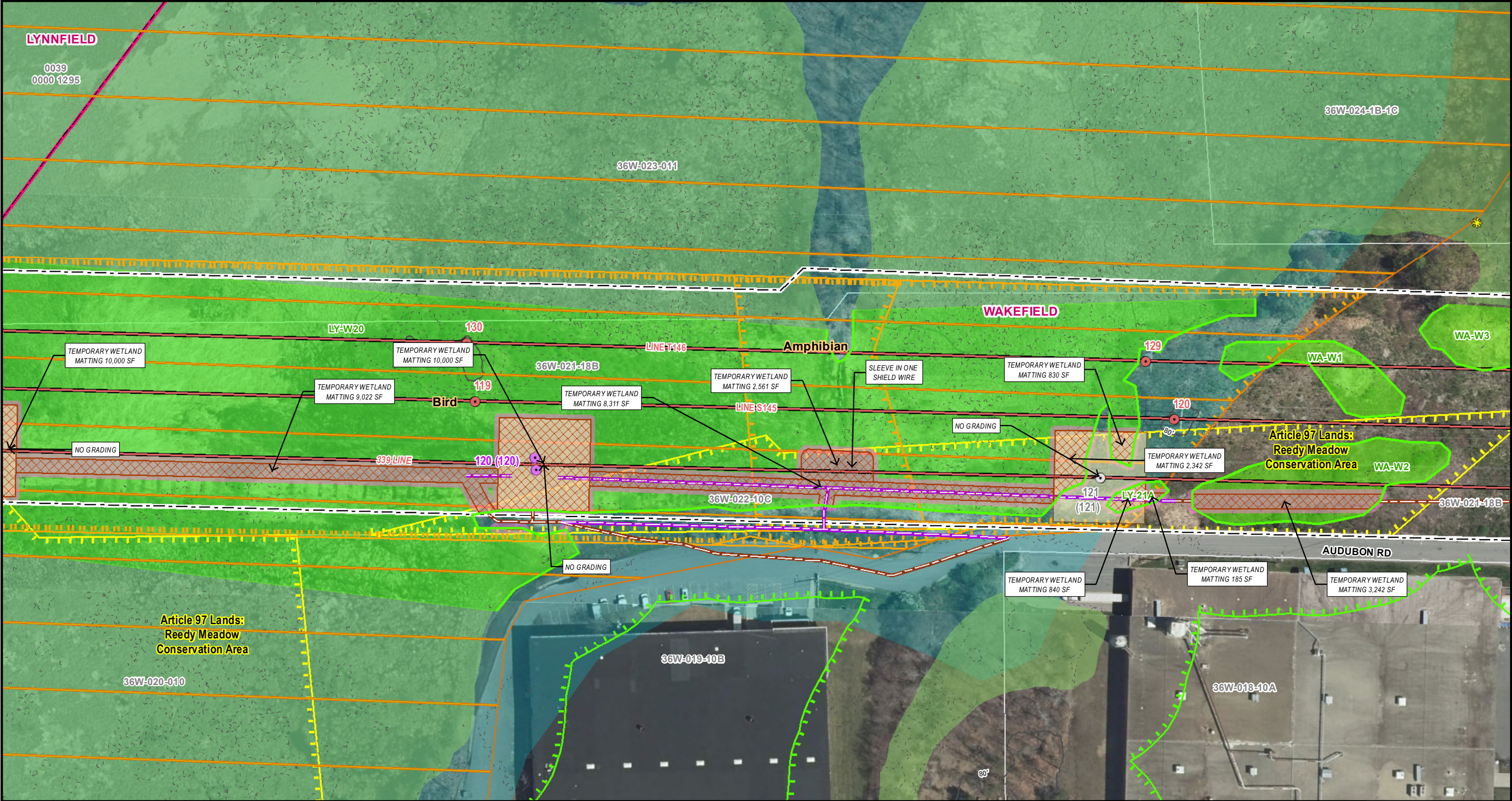
Lynnfield & Wakefield, MA

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
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- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X-Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Article 97 Lands

- Municipal

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

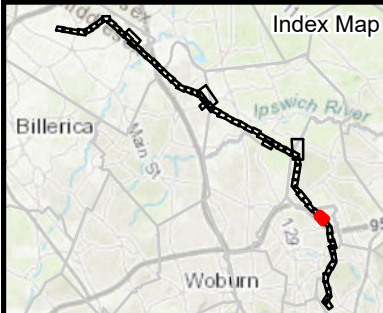
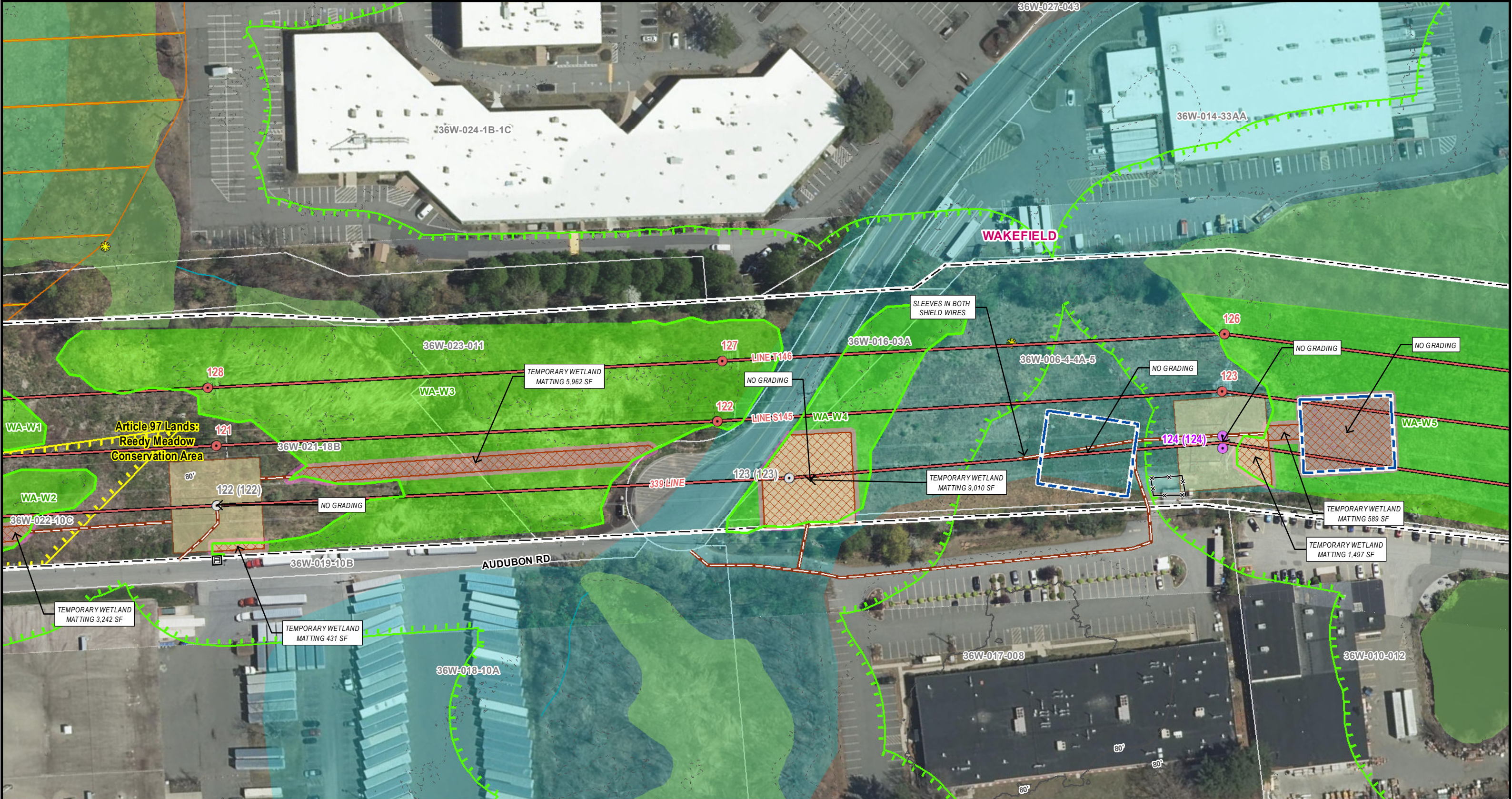
Lynnfield & Wakefield, MA

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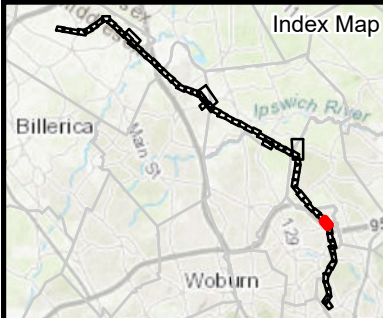
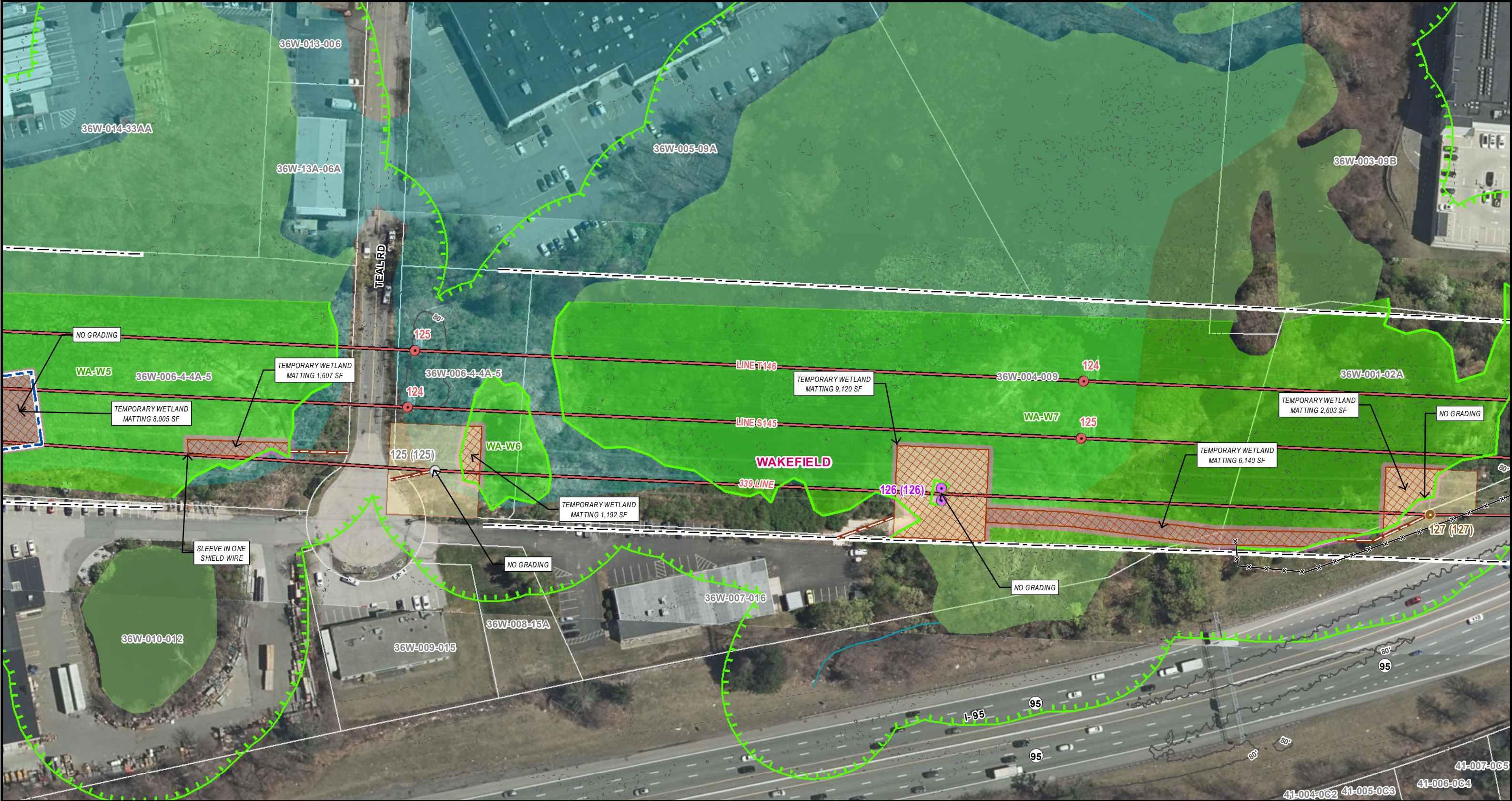
Legend													
	Existing Structure		Existing Overhead Line		Limit of Gravel		Field Delineated Stream Area*		Potential Vernal Pools		Tree to be Removed	Article 97 Lands 	
	Overhead Structure Maintenance and Painting		Install Overhead Line		Limit of Grading		Field Delineated Wetland Line		NHESP Restricted Data		Railroad		
	Overhead Structure Maintenance		Replace Overhead Line		Limit of Disturbance		Field Delineated Wetland*		NHESP Priority & Estimated Habitats		X Fence		X Wood Fence
	Replace Wood with Steel Structure		Existing Underground Conduit		Work Envelope*		Wetland Line Provided by VHB		Areas of Critical Environmental Concern		X Stone Wall		
	Replace Wood with Steel Structure (1 Caisson)		Proposed Underground Conduit		Grade Work Envelope*		Wetland Area Provided by VHB		Town Boundary		Proposed Tree Clearing Area		10ft Contours
	Replace Wood with Steel Structure (2 Caissons)		Type R Access road		Pull Pad		MADEP Hydrologic Connections		National Grid Property		2ft Contours		
	Install Steel Structure		Type S Access Road		Construction Matting		MADEP Wetlands*		National Guard Property*				
	Install Structure (2 Caissons)		Type 1 Access Road		Staging Area		100ft Buffer to Wetlands & Streams		DCR Owned Property				
	Remove Structure		Type 2 Access Road		Perennial Stream		200ft Riverfront Area		Parcel Boundaries				
	Alternate Access Road		Type 5 Access Road		Field Delineated Perennial Stream		FEMA 100yr Floodplain*		Approx. Edge of ROW				
	Alternate Off-ROW Access Road		Alternate Access Road		Field Delineated Intermittent Stream		Zone II Wellhead Protection Area		Culvert				
	Estimated Intermittent Stream								Catch Basin				

339/349 LINE ACR
MEPA General Purpose Plans
50% Design

Wakefield, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wellhead Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft Contours
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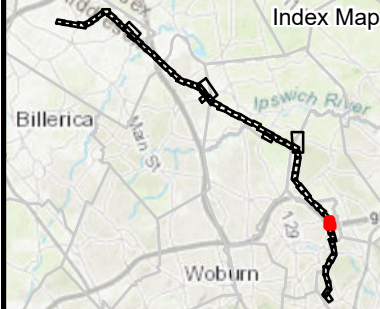
1 inch = 100 feet
0 50 100 Feet
*Indicates Layers Set to Transparency

339/349 LINE ACR
MEPA General Purpose Plans
50% Design

Wakefield, MA
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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MADEP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MADEP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
Structure Number Label	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wellhead Protection Area	Culvert	
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	

Scale: 1 inch = 100 feet
0 50 100 Feet


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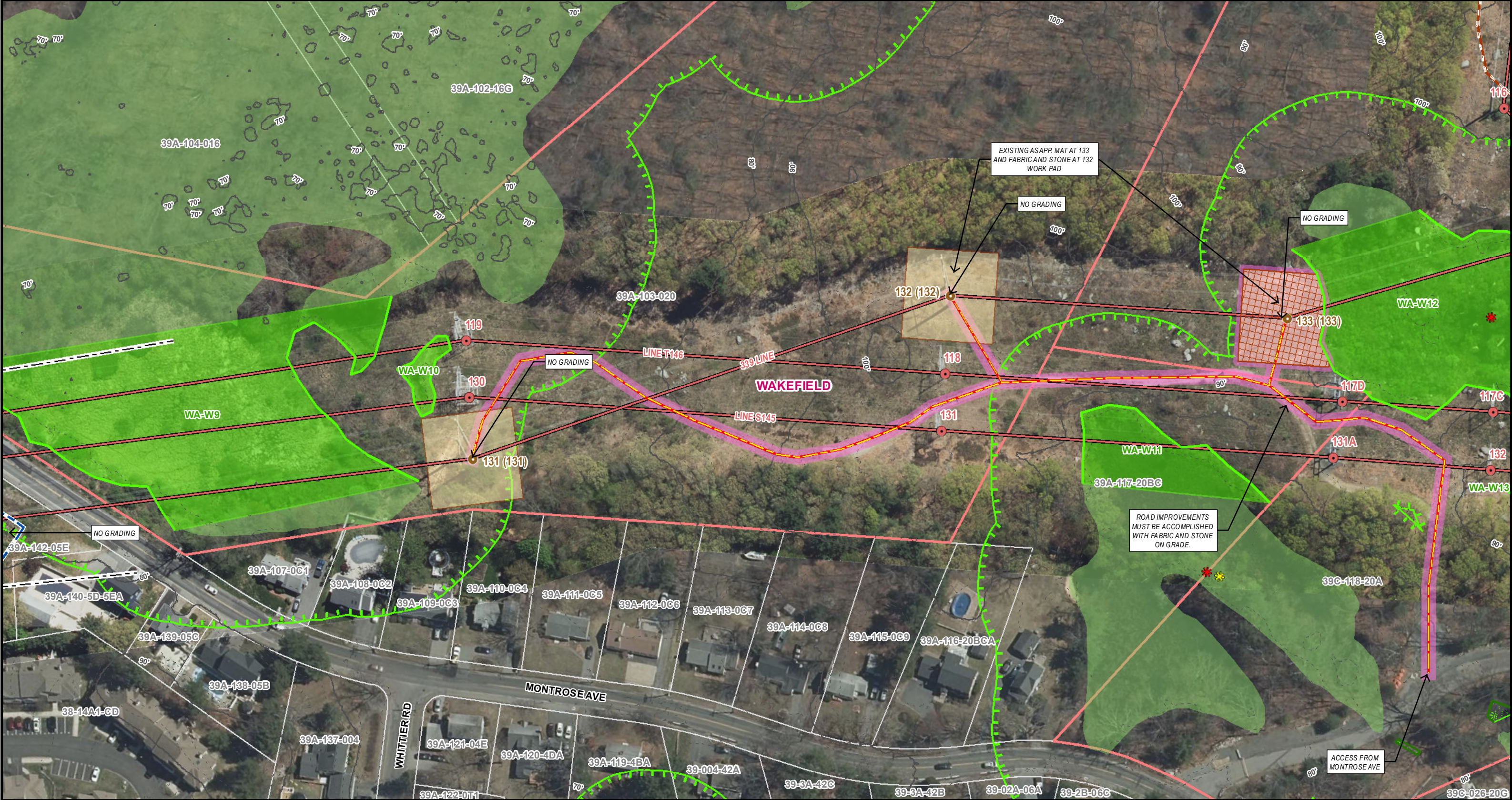
339/349 LINE ACR

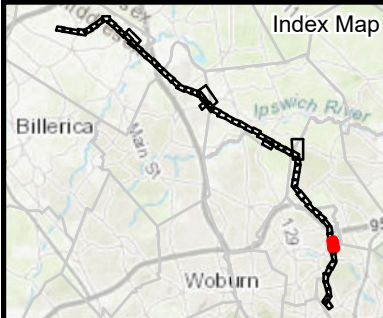
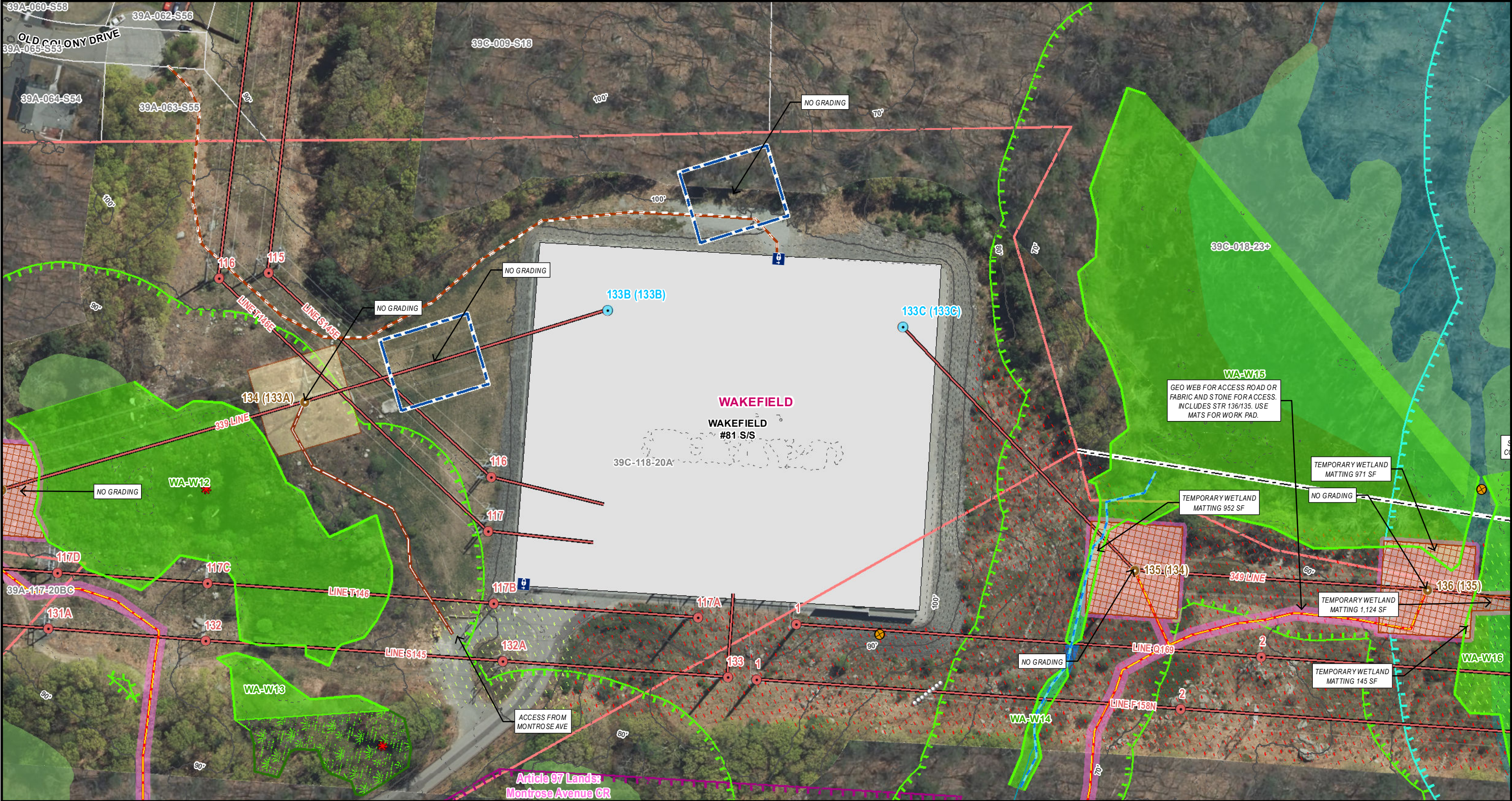
**MEPA General Purpose Plans
50% Design**

Wakefield, MA
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
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- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
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- Field Delineated Wetland*
- Wetland Line Provided by VHB
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- 100ft Buffer to Wetlands & Streams
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- Zone II Wellhead Protection Area
- Certified Vernal Pools

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- National Grid Property
- National Guard Property*
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- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- X-Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours
- Archaeological Sensitivity
- High
- Low

Article 97 Lands

- Private

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

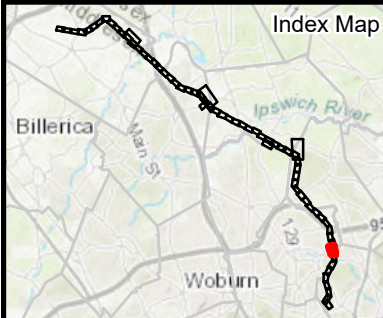
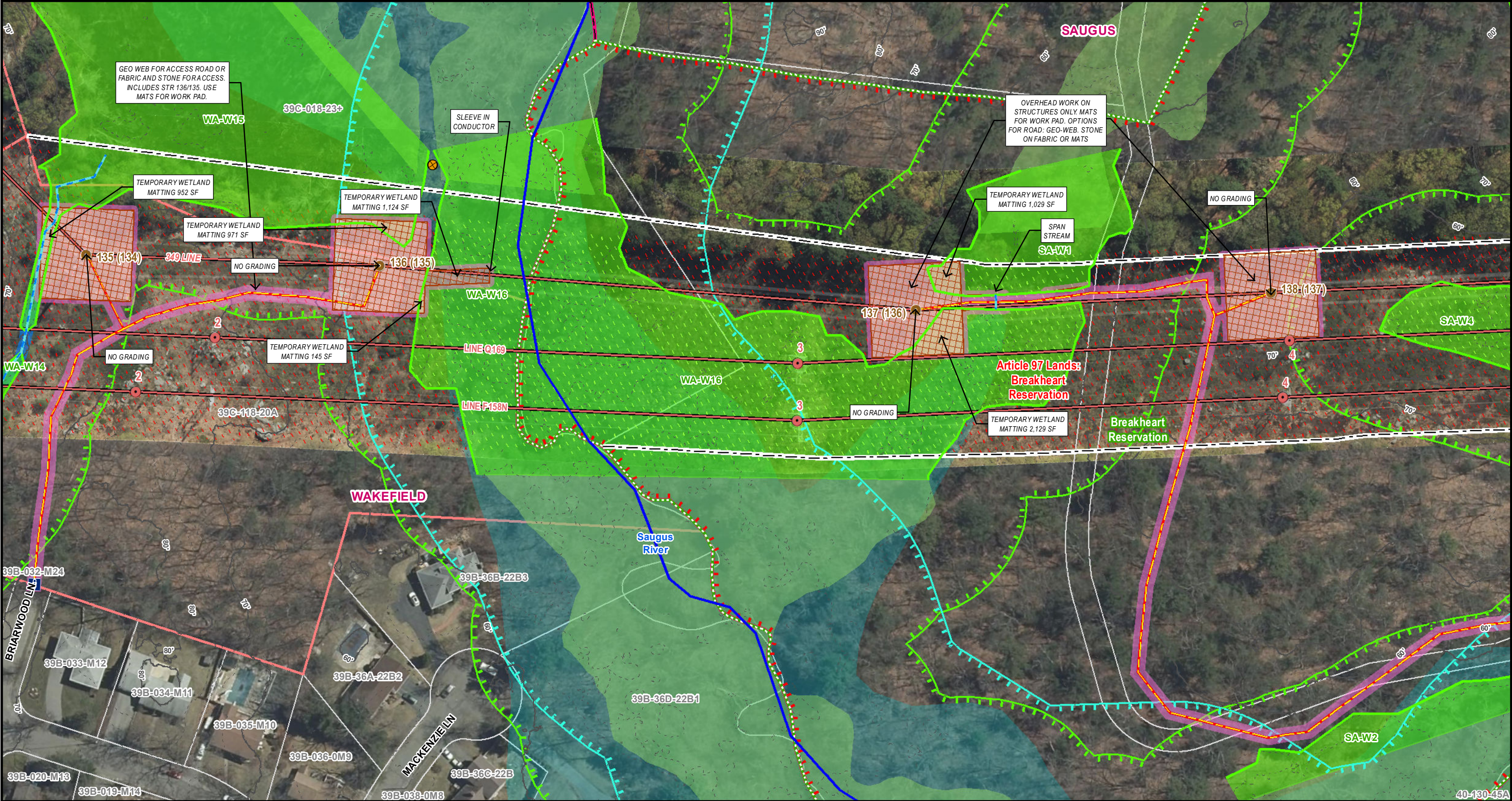
Wakefield, MA

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Legend

<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wetland Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadX FenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft ContoursArchaeological SensitivityHighLow	<ul style="list-style-type: none">Article 97 LandsDCR-State Parks & Recreation
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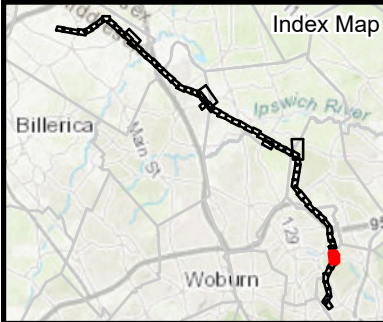
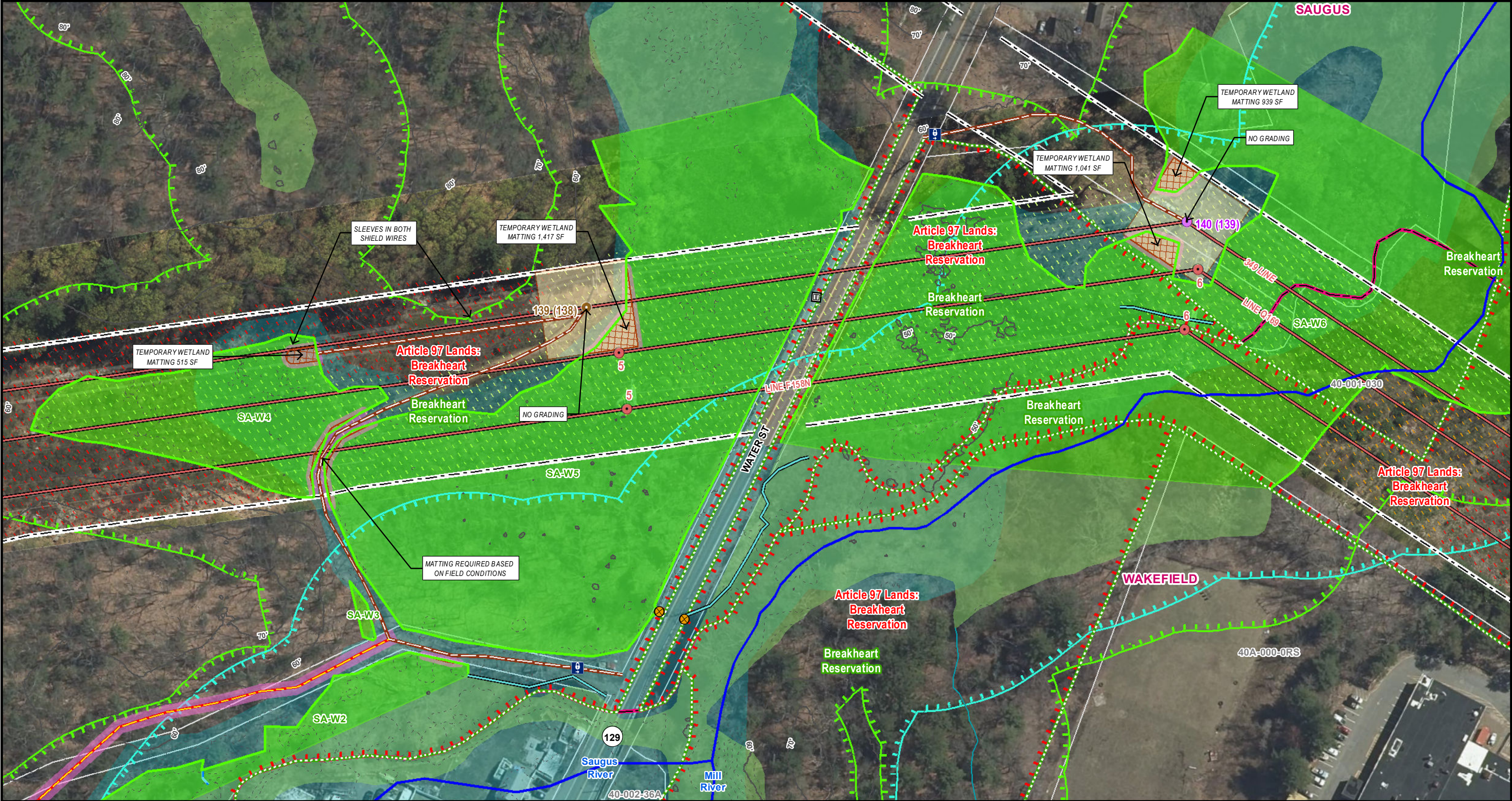
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0 50 100 Feet
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339/349 LINE ACR
MEPA General Purpose Plans
50% Design

Wakefield & Saugus, MA
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BSC GROUP



Legend	Legend	Legend	Legend	Legend	Legend
<ul style="list-style-type: none">Existing StructureOverhead Structure Maintenance and PaintingOverhead Structure MaintenanceReplace Wood with Steel StructureReplace Wood with Steel Structure (1 Caisson)Replace Wood with Steel Structure (2 Caissons)Install Steel StructureInstall Structure (2 Caissons)Remove StructureStructure Number Label	<ul style="list-style-type: none">Existing Overhead LineInstall Overhead LineReplace Overhead LineExisting Underground ConduitProposed Underground ConduitType R Access RoadType S Access RoadType 1 Access RoadType 2 Access RoadType 5 Access RoadAlternate Access RoadAlternate Off-ROW Access Road	<ul style="list-style-type: none">Limit of GravelLimit of GradingLimit of DisturbanceWork Envelope*Grade Work Envelope*Pull PadConstruction MattingStaging AreaPerennial StreamField Delineated Perennial StreamField Delineated Intermittent StreamEstimated Intermittent Stream	<ul style="list-style-type: none">Field Delineated Stream Area*Field Delineated Wetland LineField Delineated Wetland*Wetland Line Provided by VHBWetland Area Provided by VHBMAD EP Hydrologic ConnectionsMAD EP Wetlands*100ft Buffer to Wetlands & Streams200ft Riverfront AreaFEMA 100yr Floodplain*Zone II Wetland Protection AreaCertified Vernal Pools	<ul style="list-style-type: none">Potential Vernal PoolsNHESP Restricted DataNHESP Priority & Estimated HabitatsAreas of Critical Environmental ConcernTown BoundaryNational Grid PropertyNational Guard Property*DCR Owned PropertyParcel BoundariesApprox. Edge of ROWCulvertCatch Basin	<ul style="list-style-type: none">Tree to be RemovedRailroadFenceWood FenceStonewallApproximate PipelineProposed Tree Clearing Area10ft Contours2ft ContoursArticle 97 LandsDCR-State Parks & Recreation
					Archaeological Sensitivity <ul style="list-style-type: none">HighModerateLow
					Scale 1 inch = 100 feet 0 50 100 Feet *Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

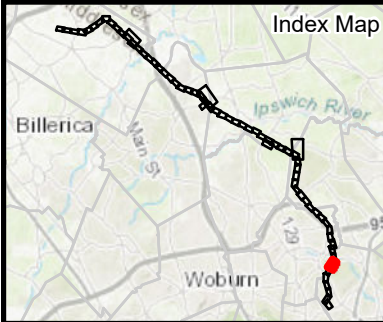
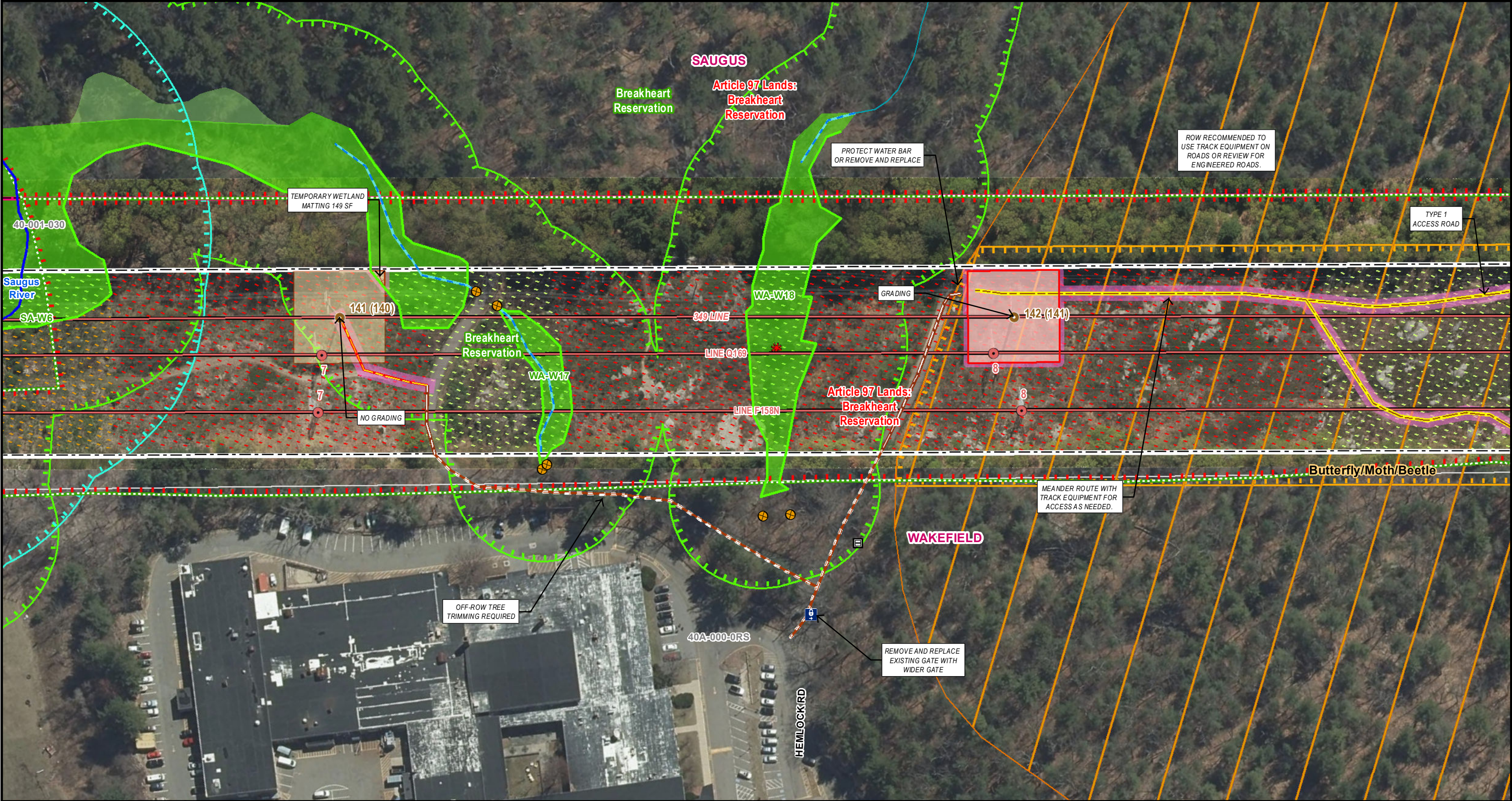
Saugus & Wakefield, MA

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Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed	Archaeological Sensitivity
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Disturbance	Field Delineated Wetland Line	NHESP Restricted Data	Railroad	High
Overhead Structure Maintenance	Replace Overhead Line	Work Envelope*	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	Fence	Moderate
Replace Wood with Steel Structure	Existing Underground Conduit	Grade Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	Wood Fence	Low
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Pull Pad	Wetland Area Provided by VHB	Town Boundary	Stonewall	
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Construction Matting	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline	
Install Steel Structure	Type S Access Road	Staging Area	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area	
Install Structure (2 Caissons)	Type 1 Access Road	Perennial Stream	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours	
Remove Structure	Type 2 Access Road	Field Delineated Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours	
NEW/OLD Structure Number Label	Type 5 Access Road	Field Delineated Intermittent Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	Article 97 Lands	
	Alternate Access Road	Estimated Intermittent Stream	Zone II Wetland Protection Area	Culvert	DCR-State Parks & Recreation	
	Alternate Off-ROW Access Road		Certified Vernal Pools	Catch Basin		

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

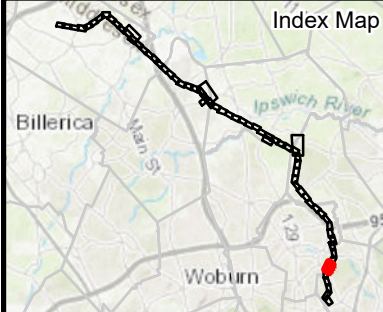
Saugus & Wakefield, MA

Page 57 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

nationalgrid

BSC GROUP



Legend

<ul style="list-style-type: none"> Existing Structure Overhead Structure Maintenance and Painting Overhead Structure Maintenance Replace Wood with Steel Structure Replace Wood with Steel Structure (1 Caisson) Replace Wood with Steel Structure (2 Caissons) Install Steel Structure Install Structure (2 Caissons) Remove Structure Structure Number Label 	<ul style="list-style-type: none"> Existing Overhead Line Install Overhead Line Replace Overhead Line Existing Underground Conduit Proposed Underground Conduit Type R Access road Type S Access Road Type 1 Access Road Type 2 Access Road Type 5 Access Road Alternate Access Road Alternate Off-ROW Access Road 	<ul style="list-style-type: none"> Limit of Gravel Limit of Grading Limit of Disturbance Work Envelope* Grade Work Envelope* Pull Pad Construction Matting Staging Area Perennial Stream Field Delineated Perennial Stream Field Delineated Intermittent Stream Estimated Intermittent Stream 	<ul style="list-style-type: none"> Field Delineated Stream Area* Field Delineated Wetland Line Field Delineated Wetland* Wetland Line Provided by VHB Wetland Area Provided by VHB MAD EP Hydrologic Connections MAD EP Wetlands* 100ft Buffer to Wetlands & Streams 200ft Riverfront Area FEMA 100yr Floodplain* Zone II Wellhead Protection Area Certified Vernal Pools 	<ul style="list-style-type: none"> Potential Vernal Pools NHESP Restricted Data NHESP Priority & Estimated Habitats Areas of Critical Environmental Concern Town Boundary National Grid Property National Guard Property* DCR Owned Property Parcel Boundaries Approx. Edge of ROW Culvert Catch Basin 	<ul style="list-style-type: none"> Tree to be Removed Railroad X Fence X Wood Fence Stonewall Approximate Pipeline Proposed Tree Clearing Area 10ft Contours 2ft Contours Archaeological Sensitivity <ul style="list-style-type: none"> High Low
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Article 97 Lands

DCR-State Parks & Recreation

1 inch = 100 feet

0 50 100 Feet

**Indicates Layers Set to Transparency*

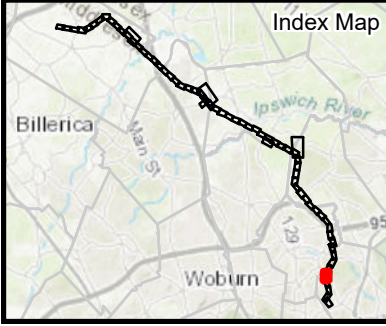
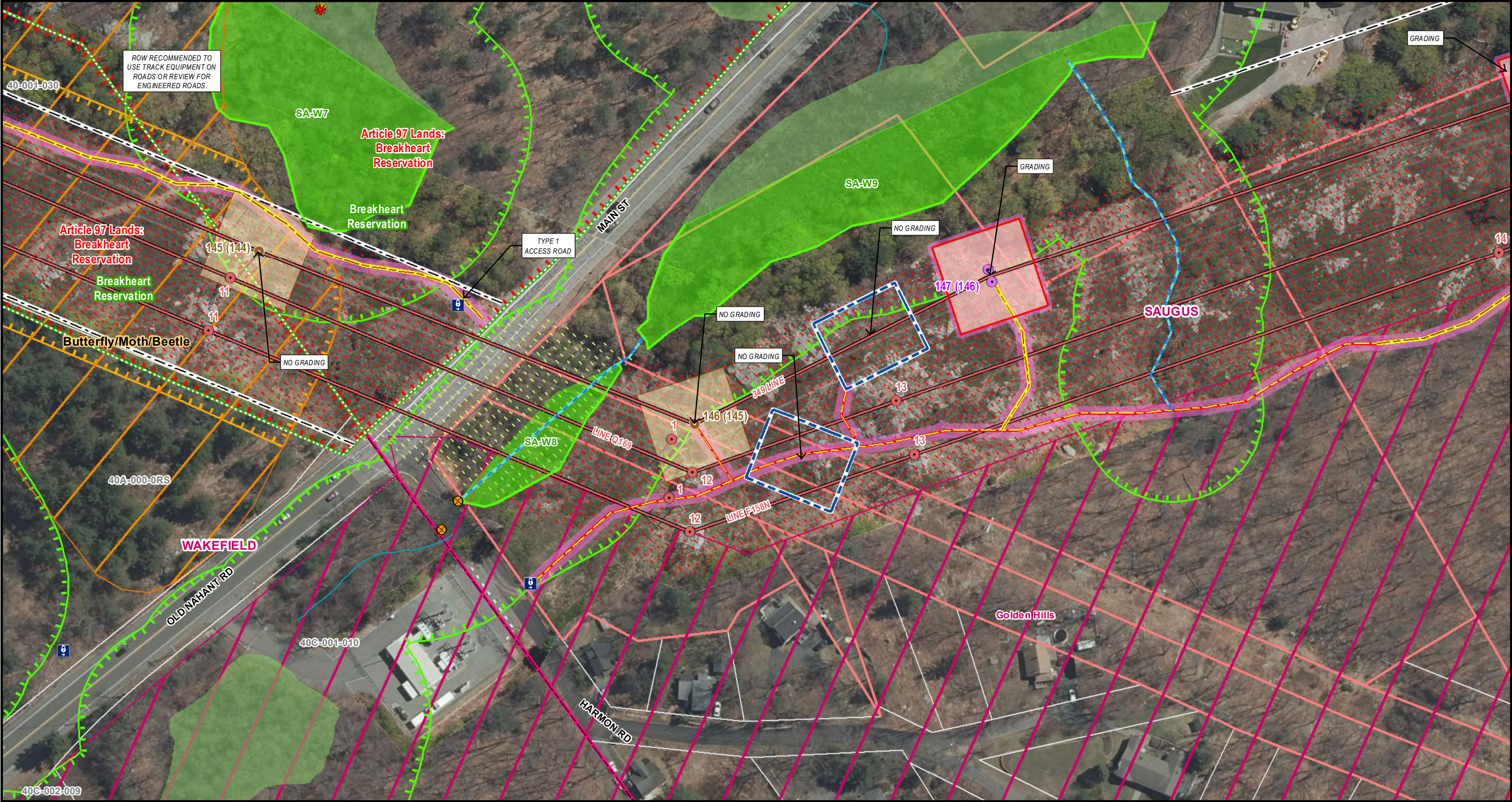
339/349 LINE ACR

MEPA General Purpose Plans 50% Design

Saugus & Wakefield, MA
Page 58 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

nationalgrid
BSC GROUP



Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
- Replace Wood with Steel Structure (1 Caisson)
- Replace Wood with Steel Structure (2 Caissons)
- Install Steel Structure
- Install Structure (2 Caissons)
- Remove Structure
- Structure Number Label

- Existing Overhead Line
- Install Overhead Line
- Replace Overhead Line
- Existing Underground Conduit
- Proposed Underground Conduit
- Type R Access road
- Type S Access Road
- Type 1 Access Road
- Type 2 Access Road
- Type 5 Access Road
- Alternate Access Road
- Alternate Off-ROW Access Road

- Limit of Gravel
- Limit of Grading
- Limit of Disturbance
- Work Envelope*
- Grade Work Envelope*
- Pull Pad
- Construction Matting
- Staging Area
- Perennial Stream
- Field Delineated Perennial Stream
- Field Delineated Intermittent Stream
- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
- Wetland Area Provided by VHB
- MAD EP Hydrologic Connections
- MAD EP Wetlands*
- 100ft Buffer to Wetlands & Streams
- 200ft Riverfront Area
- FEMA 100yr Floodplain*
- Zone II Wetland Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours
- Archaeological Sensitivity
- High
- Low

Article 97 Lands

- DCR-State Parks & Recreation

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

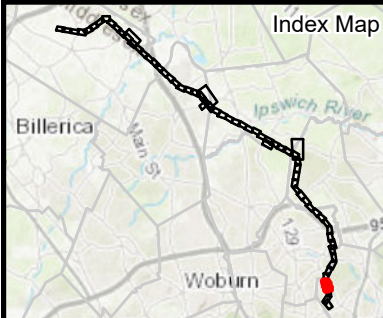
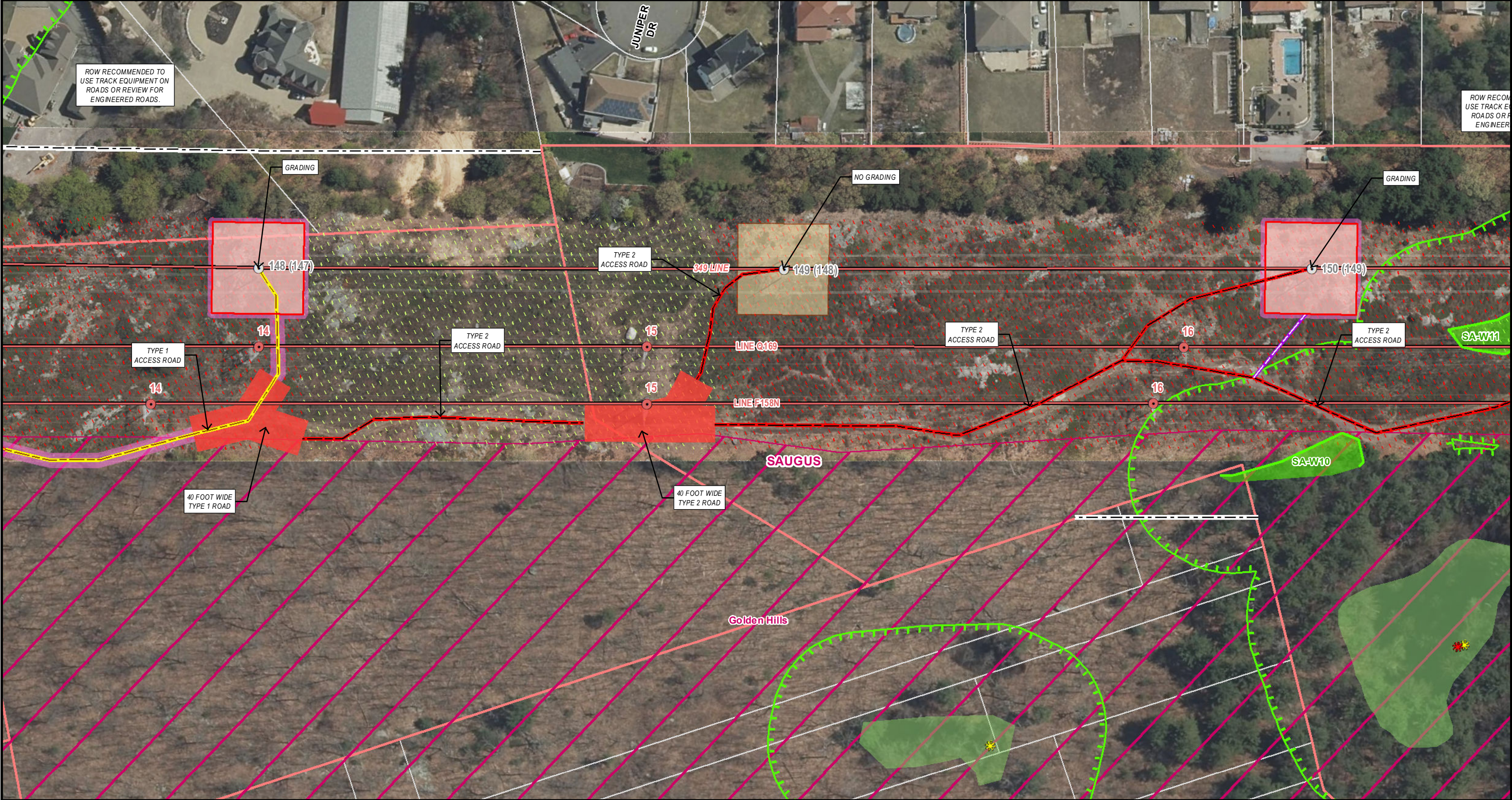
Wakefield & Saugus, MA

Page 59 of 63

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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BSC GROUP



Legend

Existing Structure	Existing Overhead Line	Limit of Gravel	Field Delineated Stream Area*	Potential Vernal Pools	Tree to be Removed
Overhead Structure Maintenance and Painting	Install Overhead Line	Limit of Grading	Field Delineated Wetland Line	NHESP Restricted Data	Railroad
Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	X Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	X Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MAD EP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MAD EP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	FEMA 100yr Floodplain*	Parcel Boundaries	2ft Contours
Structure Number Label	Alternate Access Road	Field Delineated Perennial Stream	Zone II Wellhead Protection Area	Approx. Edge of ROW	Archaeological Sensitivity
	Alternate Off-ROW Access Road	Field Delineated Intermittent Stream	Certified Vernal Pools	Culvert	High
		Estimated Intermittent Stream		Catch Basin	Low

1 inch = 100 feet

0 50 100 Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

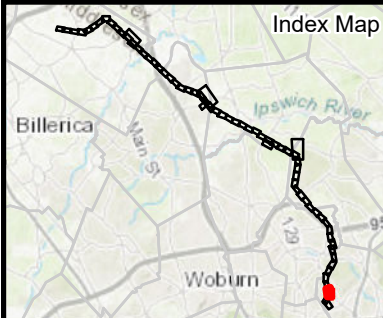
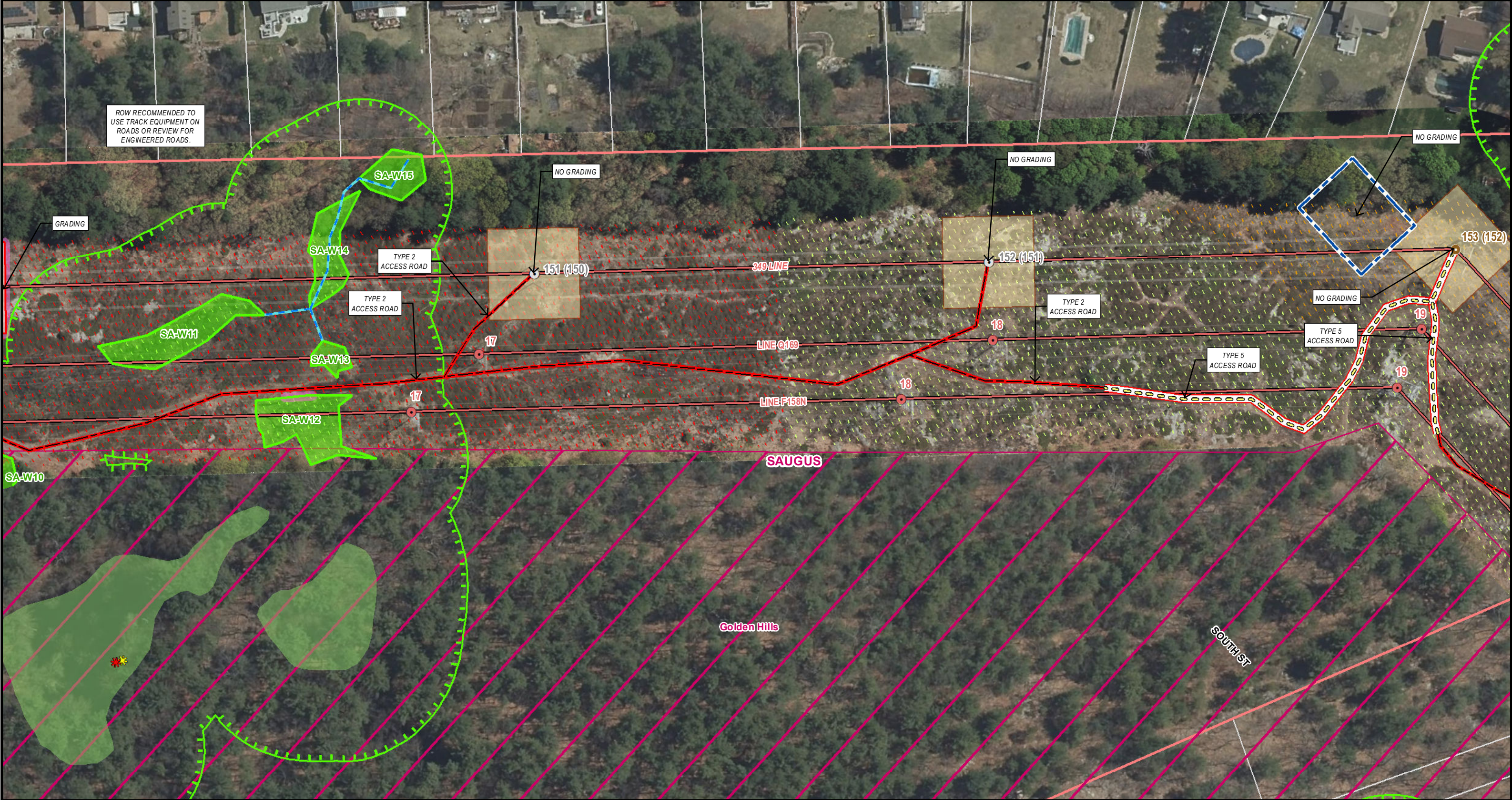
Saugus, MA

Page 60 of 63

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BSC GROUP



Legend

- Existing Structure
- Overhead Structure Maintenance and Painting
- Overhead Structure Maintenance
- Replace Wood with Steel Structure
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- Limit of Gravel
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- Work Envelope*
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- Pull Pad
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- Perennial Stream
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- Estimated Intermittent Stream

- Field Delineated Stream Area*
- Field Delineated Wetland Line
- Field Delineated Wetland*
- Wetland Line Provided by VHB
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- 100ft Buffer to Wetlands & Streams
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- Zone II Wellhead Protection Area
- Certified Vernal Pools

- Potential Vernal Pools
- NHESP Restricted Data
- NHESP Priority & Estimated Habitats
- Areas of Critical Environmental Concern
- Town Boundary
- National Grid Property
- National Guard Property*
- DCR Owned Property
- Parcel Boundaries
- Approx. Edge of ROW
- Culvert
- Catch Basin

- Tree to be Removed
- Railroad
- Fence
- Wood Fence
- Stonewall
- Approximate Pipeline
- Proposed Tree Clearing Area
- 10ft Contours
- 2ft Contours

Archaeological Sensitivity

- High
- Moderate
- Low

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

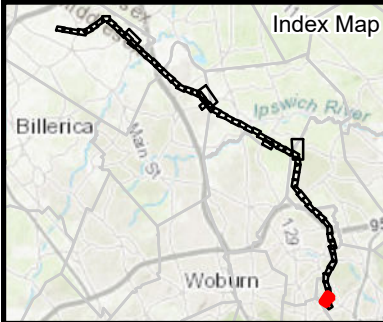
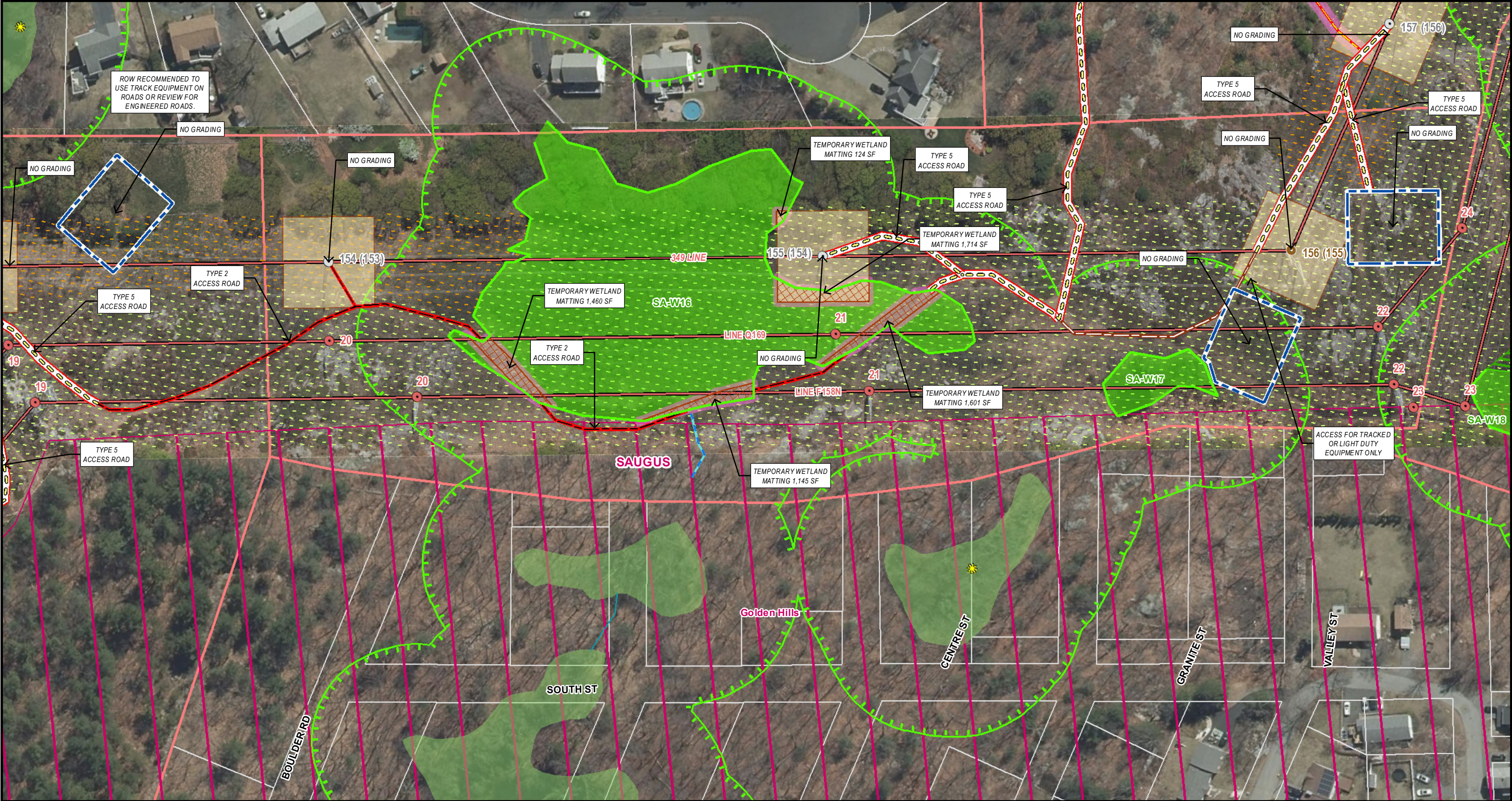
Saugus, MA

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Legend

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Overhead Structure Maintenance	Replace Overhead Line	Limit of Disturbance	Field Delineated Wetland*	NHESP Priority & Estimated Habitats	X-Fence
Replace Wood with Steel Structure	Existing Underground Conduit	Work Envelope*	Wetland Line Provided by VHB	Areas of Critical Environmental Concern	Wood Fence
Replace Wood with Steel Structure (1 Caisson)	Proposed Underground Conduit	Grade Work Envelope*	Wetland Area Provided by VHB	Town Boundary	Stonewall
Replace Wood with Steel Structure (2 Caissons)	Type R Access road	Pull Pad	MADRP Hydrologic Connections	National Grid Property	Approximate Pipeline
Install Steel Structure	Type S Access Road	Construction Matting	MADRP Wetlands*	National Guard Property*	Proposed Tree Clearing Area
Install Structure (2 Caissons)	Type 1 Access Road	Staging Area	100ft Buffer to Wetlands & Streams	DCR Owned Property	10ft Contours
Remove Structure	Type 2 Access Road	Perennial Stream	200ft Riverfront Area	Parcel Boundaries	2ft Contours
	Type 5 Access Road	Field Delineated Perennial Stream	FEMA 100yr Floodplain*	Approx. Edge of ROW	Archaeological Sensitivity
	Alternate Access Road	Field Delineated Intermittent Stream	Zone II Wetland Protection Area	Culvert	Moderate
	Alternate Off-ROW Access Road	Estimated Intermittent Stream	Certified Vernal Pools	Catch Basin	Low

1 inch = 100 feet

0 50 100

Feet

*Indicates Layers Set to Transparency

339/349 LINE ACR

MEPA General Purpose Plans

50% Design

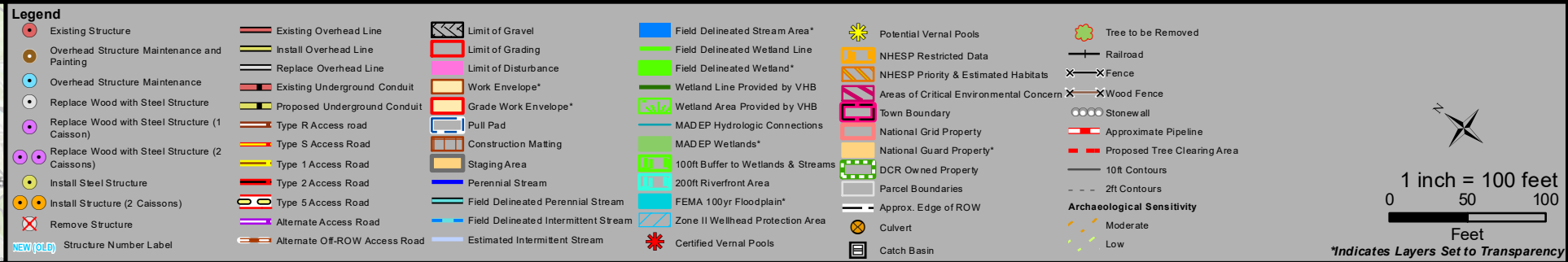
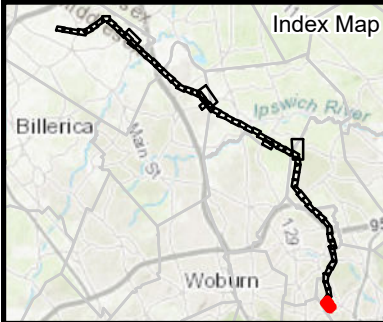
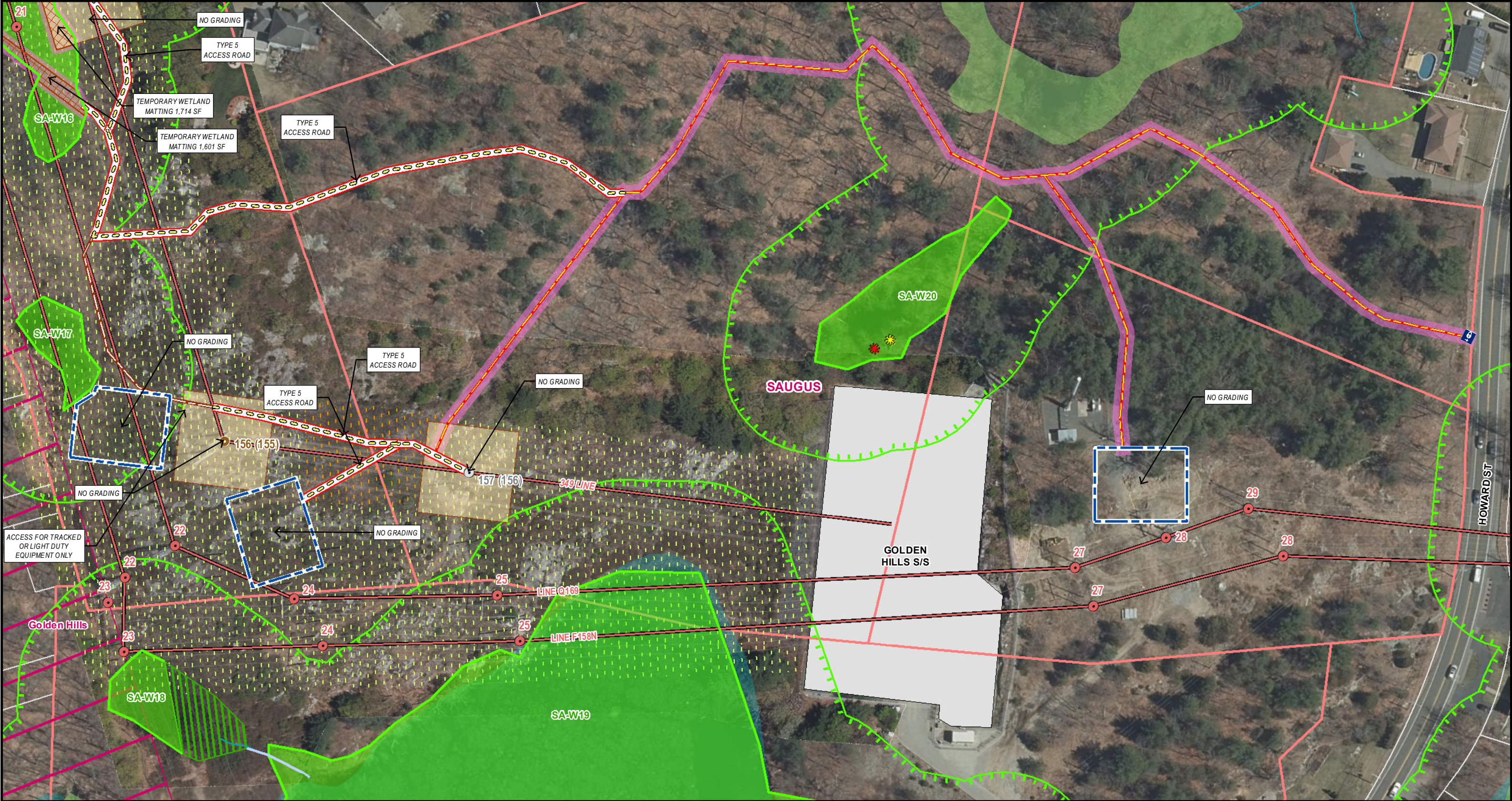
Saugus, MA

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BSC GROUP



339/349 LINE ACR

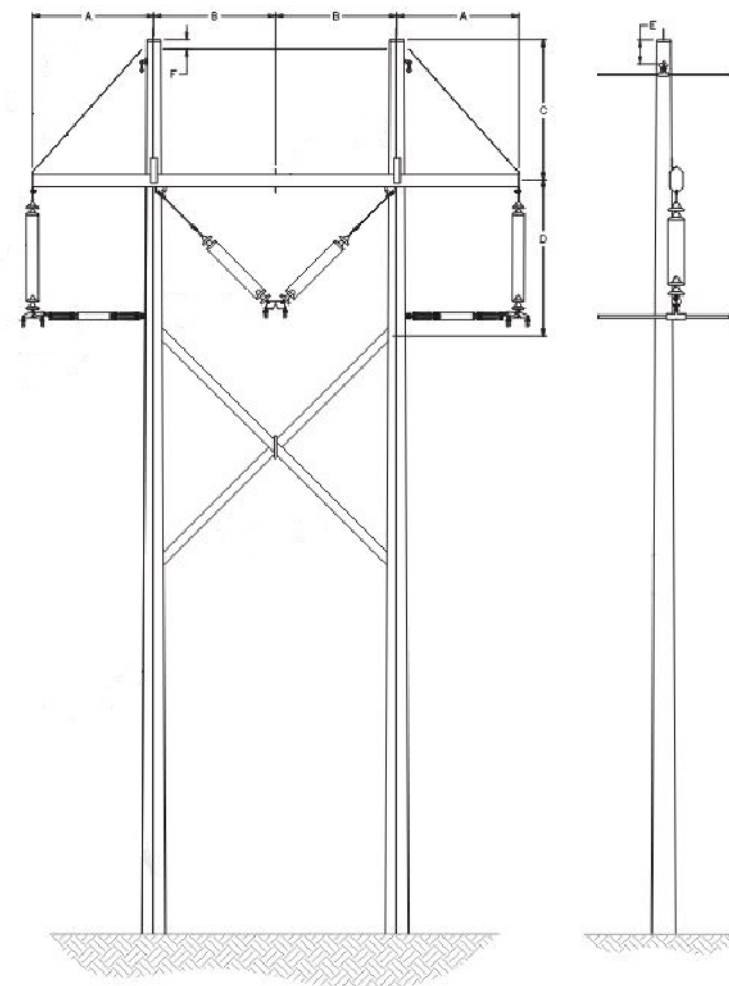
MEPA General Purpose Plans

50% Design

Saugus, MA
Page 63 of 63

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BSC GROUP

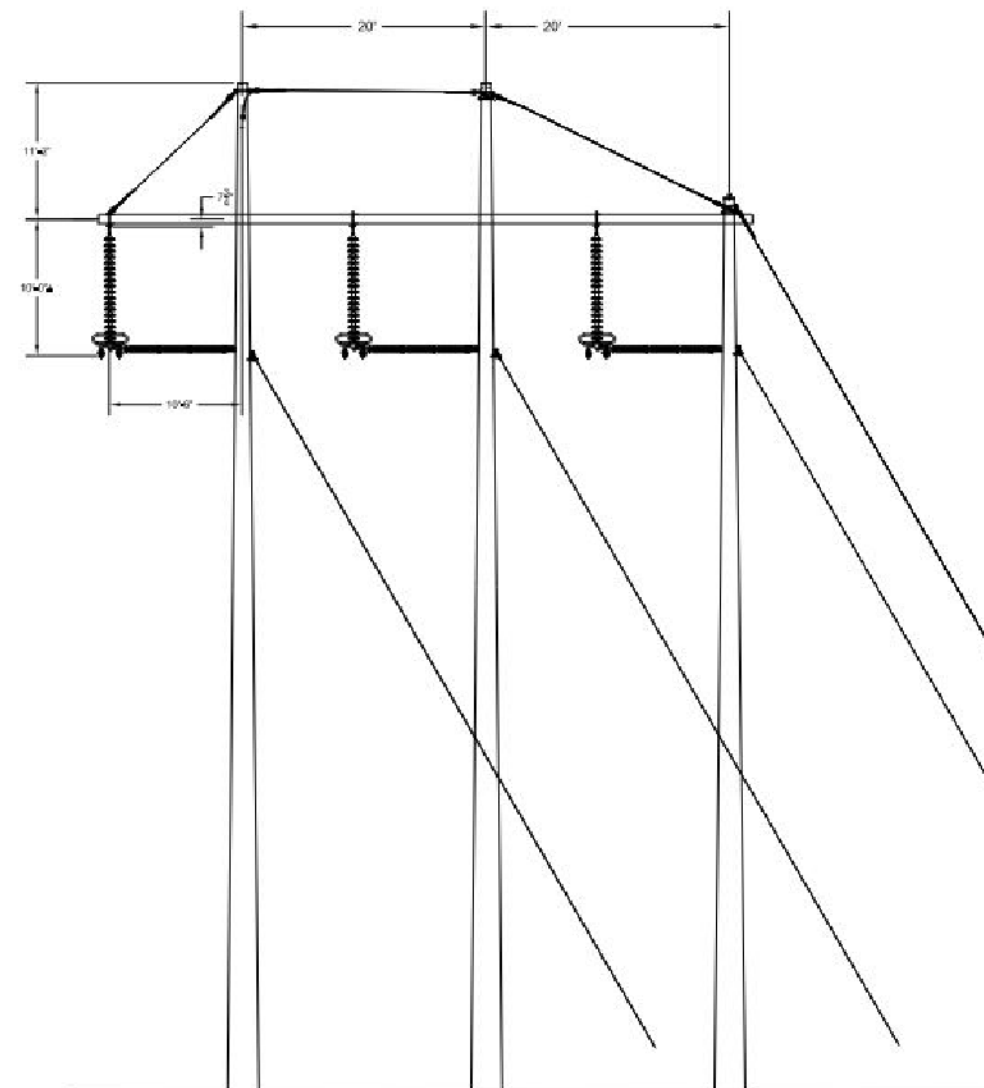


FRONT ELEVATION

SIDE ELEVATION

DIMENSION TABLE								
	A	B	C	D	E	F	DISCS	VOLTAGE
1	9'-6"	9'-6"	9'-2"	12'-4"	1'-6"	8"	18	345kV

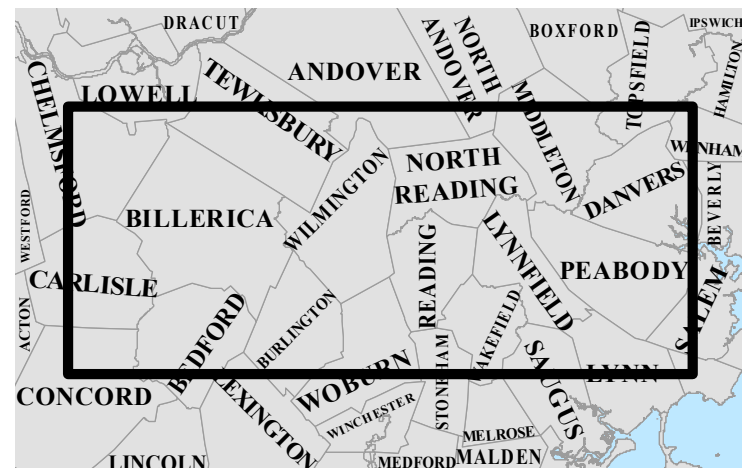
EXISTING H-FRAME CROSS-SECTION
ALL STRUCTURES (EXCEPT 6, 102, 124 & 125)



EXISTING CROSS-SECTION
STRUCTURES 6, 102, 124 & 146

Project Vicinity

Legend



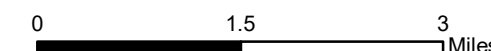
339/349 ACR Project

Typical Structure Details - 339/349 ACR

State of Massachusetts

Essex & Middlesex Counties:

Towns of Andover, Lynnfield, North Reading, Reading, Saugus, Tewksbury, Wakefield & Wilmington



1" = 7,500'

NOT FOR
CONSTRUCTION

DATE: 10/28/2022

AUTHOR: LSTANLEY

Attachment B

EENF SECRETARY'S CERTIFICATE AND COMMENT LETTERS (ANNOTATED)



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Maura T. Healey
GOVERNOR

Kimberley Driscoll
LIEUTENANT GOVERNOR

Rebecca L. Tepper
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
<http://www.mass.gov/eea>

February 17, 2023

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : 339-349 Line Asset Condition Refurbishment (ACR) Project
PROJECT MUNICIPALITY : Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus
PROJECT WATERSHED : Shawsheen, Ipswich and North Coast
EEA NUMBER : 16647
PROJECT PROPONENT : New England Power Company (NEP)
DATE NOTICED IN MONITOR : January 11, 2023

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the submission of an Environmental Impact Report (EIR). In accordance with Section 11.06(8) of the MEPA regulations, the Proponent requested that I allow a Single EIR to be submitted in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

CS-1

Project Description

As described in the EENF, the project proposes refurbishment activities along the 339/349 Transmission Line right-of-way (ROW) between the Tewksbury #22A Sub-station (Tewksbury) and the Golden Hills Sub-station (Saugus). The 339/349 Line ROW runs for approximately 17.25 miles, through the Towns of Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus. The refurbishment project includes the replacement of 98 structures, the removal of 16 structures, and the installation of 12 new structures. Existing wood H-frame structures will be replaced

with steel H-frame structures. The majority of structure replacements (79 of 98) will be directly embedded into the ground; however, where soil or line conditions necessitate, replacement structures will be supported on concrete caisson foundations (26 structures will be supported on 51 concrete caissons). Additional work includes construction of new and improvement of existing access roads (5.1 miles) and installation of Optical Ground Wire (OPGW).¹ To meet safety standards following installation of new (slightly wider) structures, a 0.6 mile length of Line 339 in North Reading, Reading, and Lynnfield will be realigned 75-feet (ft) to the south towards the S146/T146 Line. The realignment will require additional vegetation removal to obtain a minimum horizontal clearance of 30 ft (38-ft without wind)² to the edge of the ROW easement under all horizontal clearance weather conditions between structures 91-98 on the 339 Line. The EENF states that to provide sufficient area for construction, reliability, maintenance, and operation of the proposed line, vegetation on the existing ROW will continue to be maintained to prevent the growth of tall woody species and will include tree removal and trimming beyond the scope covered by the Five-Year Vegetation Management Plan (2019-2023VMP). The EENF describes the need to get as close to meeting the standard 49-ft clearance in all locations both on- and off-ROW where feasible.

Project Corridor

As described in the EENF, total land area within the 339/349 Line ROW is approximately 653.62 acres within the Towns of Tewksbury, Wilmington, Andover, North Reading, Reading, Wakefield, Lynnfield, and Saugus. The existing mainline consists of a 345 kV overhead electric transmission line supported by wooden H-frame structures and is generally oriented northwest-to-southeast and runs for 17.25 miles between Tewksbury and Saugus. The existing ROW is approximately 150-ft wide in most locations; however, as noted above, in North Reading, Reading and Lynnfield, the mainline is co-located with the S146/T146 Lines and the ROW is wider in these locations.

Conditions within the project area include moderately level terrain, with more hilly terrain on the eastern end of the ROW. Upland portions of the ROW consist of shrubby and herbaceous vegetation communities. Where undeveloped, the edge of the ROW consists of forested upland and wetland. Land use adjacent to the project ROW includes agricultural, recreational, as well as commercial and residential development. The ROW crosses multiple rivers, streams, ponds, and wetland systems within the Shawsheen, Ipswich, and North Coast watersheds. The EENF states that there are nine Certified Vernal Pools (CVPs) and four Potential Vernal Pools (PVPs) located within (or near) the ROW in Andover, North Reading, Lynnfield, Wakefield, and Saugus. Temporary construction matting is proposed in three of the PVPs. As noted on the MEPA site walk on January 25, 2023, additional PVPs may exist on the ROW.

The ROW contains Bordering Vegetated Wetlands (BVW), Isolated Vegetated Wetlands (IVW), Inland Bank, Land Under Water (LUW), Bordering Land Subject to Flooding (BLSF), Riverfront Area (RFA), and associated Buffer Zones. The project corridor includes areas that are inundated during a 100-year storm as mapped on the Federal Emergency Management Act (FEMA) Flood Insurance Rate Maps (FIRMs). The EENF identifies areas of Priority Habitat and Rare Species as determined by the 15th Edition of the Massachusetts Natural Heritage Atlas for eleven species including one mammal, three birds, one amphibian, and six invertebrates. The site contains several historic and archaeological sites

¹ OPGW will replace existing shieldwire and will provide high-speed communication between substations.

² The EENF indicates 49-ft is the suggested minimum clearance to provide reduced risk of outages due to falling trees/branches.

previously recorded in the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

The project site is not located within or within one mile of Environmental Justice (EJ) populations. The site is located within five miles of 279 EJ populations, within eight municipalities, characterized by Income (9), Minority (165), English Isolation (2), Minority and English Isolation (19), Minority and Income (61), and Minority, Income, and English Isolation (23). As described below, the EENF identified the "Designated Geographic Area" (DGA) for the project as one mile (no EJ populations were identified within this radius); therefore, MEPA EJ regulations and protocols do not apply to the project.

Environmental Impacts and Mitigation

According to the EENF potential environmental impacts associated with the project include the alteration of ± 10 acres of land consisting of 2.33 acres of permanent impacts associated with tree clearing and 7.7 acres associated with the expansion and construction of stone access roads (conversion of vegetated areas to semi-pervious artificial surface). Potential impacts to wetland resource areas are listed in the table below.

Wetland Resource Area	Temporary Construction Mat sf/acre	Permanent Wetland Impacts sf/acre	Total Impact sf/acre
BVW	720,682 / 16.6	103,645 / 2.38	754,070 / 19.0
IVW	12,844 / 0.3	1,706 / 0.04	85,021 / 0.34
BLSF ³	5,703 / 0.13	4,296 / 0.1	389,517 / 0.2
RFA ⁴	83,227 / 2	3,230 / 0.07	86,457 / 60
Bank ⁵	288 linear feet (lf)	0 lf	288 lf

Temporary impacts are associated with construction mats for access roads, work pads and pull pad envelopes, and mowing associated with the current Vegetation Management Plan (VMP). Permanent impacts are associated with fill for structure foundations, cut and fill for access roads, work envelopes, and pull pads, stabilization material for access roads, over excavation for BLSF compensation, and tree removal. The EENF identifies that the project will permanently impact 2.8 acres and temporarily impact 6 acres of Priority and Estimated Habitat of state-listed species. Greenhouse Gas (GHG) emissions and other air pollutants are associated with construction vehicles and tree clearing. Impacts to historical and archaeological areas are possible.

Measures to avoid, minimize, and mitigate project impacts include use of existing access roads to avoid new land disturbance, where feasible; use of temporary construction mats where crossing wetlands or water courses is unavoidable; spanning of streams to avoid impacts to bank; replacing structures outside of BVW where feasible; use of erosion and sedimentation controls and other best management practices (BMPs) during construction; restoration of any disturbed areas to existing grades to allow for

³ Impacts are the result of 56,521 sf of access road and 237,402 sf of cut associated with work envelopes, pull pads and access proposed in BLSF; however, areas will be over-excavated and not result in fill.

⁴ Note that impacts located within the limits of Riverfront Area overlap with impacts to BLSF, BVW, and the 100-ft Buffer Zone. Therefore, the total impacts to the project site are not equal to the sum of alterations.

⁵ Construction mats will span the Bank of rivers and streams; however, the totals reflect the potential for alteration.

CS-3 revegetation with compatible species; and restoration of temporarily impacted wetland resources to pre-construction conditions. BVW replication is proposed to mitigate for 0.47 acres of permanent fill associated with structure foundations. As indicated below, comments from Massachusetts Department of Environmental Protection (MassDEP) indicate BVW replication will also be required for tree removal. Tree stumps will be left in place except at work envelopes and structure locations, and within access roads. The Proponent proposes to use tree clearing methods that minimize site disturbance such as clearing by hand in sensitive areas or use of feller bunchers. Over excavation of work envelopes and access roads is proposed to provide compensatory flood storage for permanent fill in BLSF. The EENF indicates that significant archaeological resources will be avoided if safe/practicable alternatives are available and the Proponent will conduct investigations for archaeological resources in accordance with a Massachusetts State Archaeologist's permitted plan prior to any site preparation or excavation. The Proponent will use construction and vegetation removal techniques to avoid and minimize impacts within sensitive resource areas, including areas of Priority and Estimated Habitat.

Jurisdiction and Permitting

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(3)(a)1.a. of the MEPA regulations because it requires Agency Actions and will result in the alteration of one or more acres of BVW. Additionally, the project exceeds the Environmental Notification Form (ENF) thresholds at 301 CMR 11.03(3)(b)1.d., 301 CMR 11.03(3)(b)(1)f., 301 CMR 11.03(2)(b)2. and 301 CMR 11.03(11)(b) for, respectively, alteration of 5,000 or more sf of bordering or isolated wetlands; alteration of one half or more acres of any other wetlands; greater than two acres of disturbance of designated priority habitat; and any project over one-half acre within a designated ACEC, unless the project consists solely of one single family dwelling. The project requires a 401 Water Quality Certification (WQC) from MassDEP and may require a Conservation and Management Permit (CMP) from the Natural Heritage Endangered Species Program (NHESP). The project will require a Construction Access Permit (CAP) from the Department of Conservation and Recreation (DCR) and Access Permits and Non-municipal Utility Permits for Crossing over State Roads with utility Lines from the Massachusetts Department of Transportation (MassDOT). Comments from DCR note that transfers of interests in state conservation property must meet the requirements set forth in the Executive Office of Energy and Environmental Affairs' (EEA) Article 97 Land Disposition Policy and new M.G.L. c. 3, s. 5A. A transfer in ownership or interest in state conservation property would require legislative authorization by the General Court through a two-thirds supermajority roll call vote.

The project requires Orders of Conditions from the Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus Conservation Commissions (or in the case of an appeal, a Superseding Order of Conditions from MassDEP); a Section 404 Pre-construction Notification (PCN) from the U.S. Army Corps of Engineers (USACE); a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the U.S. Environmental Protection Agency (EPA); Section 7 clearance renewal from the U.S. Fish and Wildlife Service; and review by MHC acting as the State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800).

The project is not receiving Financial Assistance from the Commonwealth. Therefore, MEPA jurisdiction is limited to those aspects of the project that are within the subject matter of any required or potentially required Agency Actions and that may cause Damage to the Environment, as defined in the MEPA regulations.

Request for Single EIR

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF:

- a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
- b) provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,
- c) demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

For any Project for which an EIR is required in accordance with 301 CMR 11.06(7)(b), I must also find that the EENF:

- d) describes and analyzes all aspects of the Project that may affect Environmental Justice Populations located in whole or in part within the Designated Geographic Area around the Project; describes measures taken to provide meaningful opportunities for public involvement by Environmental Justice Populations prior to filing the expanded ENF, including any changes made to the Project to address concerns raised by or on behalf of Environmental Justice Populations; and provides a detailed baseline in relation to any existing unfair or inequitable Environmental Burden and related public health consequences impacting Environmental Justice Populations in accordance with 301 CMR 11.07(6)(n)1.

Consistent with this request, the EENF was subject to an extended comment period under 301 CMR 11.05(8).

Review of the EENF

The EENF provides a description of existing and proposed conditions; preliminary project plans; a limited analysis of alternatives; assessment of impacts; a review of construction methods; and identifies measures to avoid, minimize and mitigate environmental impacts. Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF contained an output report from the Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the “MA Resilience Design Tool”),⁶ together with information on climate resilience strategies to be undertaken by the project. The EENF included a copy of National Grid’s Vegetation Management Plan for 2019-23 and a Wildlife Habitat Analysis.

Alternatives Analysis

The EENF describes the need for the project, stating that the existing transmission structures have surpassed their life expectancy and inspections have shown deteriorated wood poles with woodpecker damage, thin/rotting pole tops, deteriorated cross arms, pole cracking, and damaged guy wires among other issues. The EENF indicates that in order to perform the refurbishment work, access improvements or re-establishment and construction of new access road will be needed due to poor

⁶ https://resilientma.org/rmat_home/designstandards/

access along most of the 339/349 ROW corridor. The EENF asserts that these improvements are needed to provide safe and stable travel surfaces for specialized utility equipment for future maintenance and/or emergency repair work.

The EENF includes analysis of a No Build Alternative, a Targeted Asset Repair/Maintenance Only Alternative, a Structure Design Alternative, and a Realignment Alternative (for the section of line between structures 91-98). The No Build Alternative establishes a baseline against which the project can be evaluated but is not a feasible option because it would not comply with national and regional reliability standards and criteria due to the asset condition of the existing circuits, pole deterioration, and the need to provide high speed communications between the substations. For these reasons, the EENF states that the No Build Alternative was dismissed.

The EENF describes the Targeted Asset Repair/Maintenance Only Alternative which would address only the most essential repairs required to meet electrical safety standards. As described in the EENF, this alternative would reduce the number of structure replacements/repairs that must be immediately addressed; however, it would not significantly reduce the extent of environmental impacts for the following reasons: extensive access road improvements would still be required as existing roads are too narrow and for safe equipment access and roads are eroded in some areas; tree removals would still be required between structures 91-98; and repeated access to the ROW to address continuing structure deterioration would be needed. As such, the Targeted Asset Repair Alternative was dismissed, as it does not significantly reduce environmental impacts (as new access roads and increased line clearances would still be required), would require multiple outages along the line, and would result in repeated, disturbance to wetlands and rare species habitat.

The Preferred Alternative proposes the installation of steel “hybrid” H-frame suspension structures with steel 3-pole structures in locations where the line changes direction. The Structure Design Alternative considers the use of steel monopole structures and standard H-frame structures. The EENF describes the advantage of the monopole as its relatively narrow size would provide improved clearance between the line and the ROW edge, reducing the extent of tree removal/trimming required for the project; however, this type of structure cannot be maintained or replaced without a line outage which is a concern for future maintenance. In addition, the difference in structure height would result in increased transfer time (from old to new structure). The installation of steel monopoles also requires a larger work envelope (15,625 sf per structure as compared to 10,00 sf for H-frame structures), resulting in greater environmental impacts. Project costs would also be greater as the steel monopole structures are more expensive. The EENF describes the advantage of standard H-frame structures is their wider phase spacing (26-ft) which provides improved safety conditions during live-line work, compared to the proposed steel hybrid H-frames (which have a phase-spacing of 22-ft). Disadvantages include the need for a greater extent of tree removal as standard H-frames are 15% wider than the hybrid H-frame structures and their wider footprint which would result in greater wetland and sensitive area impacts. For these reasons, the alternative structures were dismissed.

The EENF includes a discussion of the Realignment Alternatives Between Structures 91-98. Between Structures 91-98, the 339 Line is currently located 58-ft from the northerly edge of the ROW (as measured to the centerline), providing approximately 40 ft of clearance to the edge of the ROW (from the outermost conductor). The proposed steel hybrid structures will be wider (22-ft) than the existing structures (19-ft) and will require additional clearance between the lines and trees along the

edge of the ROW.⁷ To accommodate the required safe clearances, the proponent states tree removal could either be conducted on the north or the south side of the 339 Line. The EENF describes the north side as containing contiguous white pine forest (outside the ROW) and the south side as containing a fragmented 30-ft strip of forest separating the 339 Line from the S145/T146 Line; however, trees to the north are outside of the ROW and the Proponent would need to obtain new easements to clear in this area which is not preferred. A site visit conducted on this portion of the line on Wednesday, January 25th, showed that the fragmented wooded area on the south side of the line contains IVW and BVW with potential vernal pool habitat and is within Priority and Estimated Habitat as mapped by NHESP. The wooded area to the north is located within uplands. The Proponent also considered installation of steel monopole structures in the 91-98 area but states that this alternative was dismissed because the required caisson foundations and larger required work pads would result in greater wetland impacts. While the monopoles are taller, some tree removal would also still be required. As detailed in the Scope below, the Single EIR should provide further justification for relocating the new structures to the south of Line 339 and closer to sensitive resource areas (IVW, BVW, and PVP habitat) within Estimated and Priority Habitat.

CS-5

The Proponent states that the Preferred Alternative will result in a more resilient transmission line better suited to withstand strong winds and storm events; will provide improved communication between substations as a result of the installation of OPGW; and will reduce overall disturbance to land owners and wetland resources and rare species habitat. The Preferred Alternative will not require repeated disturbance along the ROW and does not necessitate line outages. As such, the Preferred Alternative was selected as it best addresses the project need, while resulting in the least impacts to the natural and human environment.

Land Alteration

The EENF indicates that the land area within the project ROW is approximately 653.62 acres, within which work is proposed on approximately 10 acres. Land uses were evaluated within the ROW and for a 300-ft buffer on either side of the ROW and consist primarily of industrial (48 percent), “Exempt Property”⁸ (28 percent), and residential (20 percent). The mainline crosses one DCR property, the Breakheart Reservation in Wakefield. Approximately 26.77 acres of the Breakheart Reservation is within the project area. The EENF also lists other state, municipal, and land trust properties within or adjacent to the ROW in each municipality but does not identify the acreage impacted by the project. According to the EENF, the majority of new land alteration will occur as the result of the tree clearing required for realignment between structures 91 to 98 in North Reading, Reading, and Lynnfield to better meet the horizontal clearances of 49 ft to the edge of the ROW/easement. This will require the removal of 2.33 acres of trees, converting forested area into managed scrub/shrub habitat. While existing access roads will be widened in some locations, the EENF states that road widening will not have a significant impact on land use as existing access roads are already in place and widening of these roads will only impact a small area. Land alteration impacts associated with access road is described as 7.7 acres of conversion of vegetated areas to semi-pervious artificial surface. The EENF describes the need to improve an off-ROW cart path between an existing natural gas compressor station and the ROW (off

⁷ An email from Alison Milliman, BSC Group, to Jennifer Hughes, MEPA Analyst, on February 4, 2023 states that the new structures if installed in the current ROW would be 36’ from the northern edge of ROW (measured from outermost conductor) and will be moved 4-5’ to the south to provide the required 40’ of clearance.

⁸ Exempt Property are properties that qualify from exemption from taxation under various provisions of the law and include public land and facilities, hospitals, schools, churches, and cultural institutions, M.G.L. c. 59, §5.

Lowell Street in Lynnfield) by removing trees. This area of alteration is not included in the 2.33 acres of land disturbance. Mitigation for land alteration includes minimizing soil disturbance and where possible, retaining scrub/shrub understory and ground cover to help reduce soil erosion. The EENF states large woody debris and deadwood from the 2.33 acres will be left on the ROW to create habitat and bare soils will be mulched and seeded to stimulate revegetation. The Proponent should consider reuse of cleared trees for long-lived wood products to the greatest extent practicable. The Single EIR should provide a total of all land alteration including additional alteration for access roads both on- and off-ROW.

CS-6

Access Roads

The EENF describes the need for improvement of historic access roads to meet the access requirements for the project (to accommodate construction materials and equipment). In general, access roads will need to be 16-ft wide with a level stone surface. Access road improvements are described as Type R where only minor repairs are required (filling ruts and potholes); Type S found in sensitive areas where only minimal grading or scraping is allowed; Type 1 roads where only the addition of clean stone/gravel for widening is required; Type 2 roads where native soils requiring grading and the addition of stone/gravel; and Type 5 roads, generally found on steep slopes, where extensive grading, stone addition, and measures to ensure stone remains in place are required. For each type of road, stormwater management features will be installed as appropriate; for Type 5 roads, stormwater management features will be permanent to control runoff and mitigate erosion of the constructed roads and/or adjacent slopes. The EENF states that swales, stone check dams, water bars, or other similar measures will be installed as necessary based on the access road design. The Proponent proposes to maintain all new access roads (including those which extend beyond the existing easement) once they are constructed, meaning that it will need to obtain additional easements from landowners. As noted above, the Single EIR should report all impacts associated with access roads both on- and off-ROW.

CS-7

Work Pads/Envelopes and Pull Pads

The EENF describes work envelopes that will be placed at all structures where work is proposed. Where site topography allows, the EENF states work envelopes will be mowed only. Where topography is steeper or the ground surface is uneven, work envelopes will require grading and the placement of stone (or, in sensitive resource areas, construction matting). Where stone or construction matting is placed in RA or BLSF, it will be removed once construction is complete. As stated in the EENF, stone work envelopes outside of sensitive wetland resource areas will remain in place permanently for any future maintenance/emergency work. It is unclear if permanent work pads are accounted for in the 7.7 acres of permanent land alteration. This should be clarified in the Single EIR. All access routes and work envelopes within wetlands will be matted only, and the temporary matting will be removed once construction is complete. The Proponent estimates that the work envelope required for the installation of an H-frame structure is approximately 10,000 sf.

CS-8

Vegetation Removal/Tree Clearing

The EENF states that a horizontal distance of 30 ft must be maintained from the conductor to the edge of the ROW under all weather conditions (38 ft assumed when conductor is in a stationary position) with a suggested minimum standard 49-ft clearance⁹ to provide reduced risk of outages due to falling trees/branches. Currently, the median clearances along the 339/349 Line ROW are 46 ft (outer

⁹ The EENF states 49-ft is New England Power's (NEP) standard clearance.

conductor to left edge of ROW), and 173 ft (outer conductor to right edge of ROW), with 88 of 137 locations assessed having clearances below the 49-ft threshold. The Proponent proposes to manage trees to get as close to meeting the 49-ft standard in as many locations as possible. The EENF indicates that this will require additional tree removal and trimming, beyond the scope covered by the current VMP, in some off-ROW locations and within the ROW easement. The Single EIR should indicate the acreage of impact associated with additional clearing beyond that covered by the VMP. The EENF states that all vegetation removal will be coordinated with private landowners. Following the completion of construction, maintenance activities will be consistent with the Five-Year Vegetation Management Plan (2019-23), which was included in the EENF (subject to renewal by the Massachusetts Department of Agricultural Resources (MDAR) pursuant to 333 CMR 11.00).¹⁰ A summary of all tree removal impacts in the ROW and off-ROW should be provided in the Single EIR.

CS-9

CS-10

Rare Species

As noted above, portions of the project area are mapped as *Priority* and *Estimated Habitat* for state-listed species, including twelve state-listed species (one mammal, four birds, one amphibian, and six invertebrates). The EENF lists the portions of ROW containing the habitat for each species, though specific species are not identified in the EENF at NHESP's request. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (MESA; 321 CMR 10.00). The EENF indicates that 2.33 acres of impact from tree clearing between structures 91 to 98 is also within Priority and Estimated Habitat (1.91 acres within BVW and 0.7 acres within the 100-ft BZ).

The Proponent has submitted a MESA Project Review Checklist to NHESP which identifies proposed measures to minimize and mitigate impacts to rare species. According to the EENF, based on consultations with NHESP, it is anticipated that the project will be able to avoid a "Take" of rare species through implementation of best management practices (BMPs). The Proponent has also conducted preliminary field assessments and has determined that habitat for one rare mammal species (a bat), occurs off-ROW and outside of areas proposed for tree removal. The EENF states that wetlands within the ROW provide suitable habitat for the four rare bird species (all marsh species) and one amphibian species, and the ROW also contains the native vegetation and host plants associated with the five lepidopteran (moth/butterfly) species. The project will implement all species-specific measures to reduce impacts as required by NHESP, including time-of-year (TOY) restrictions, habitat avoidance measures, and design measures to minimize permanent impacts from the work as outlined in the EENF.

CS-11

Comments from NHESP state that the project must be conditioned in order to avoid a Take. Anticipated conditions include timing restrictions and protective measures for placement and removal of construction matting within Priority Habitat. As noted in comments, provided all conditions are implemented and there are no changes to the project plans, this project is not anticipated to result in a Take of state-listed species. The Single EIR should include commitments to implement the conditions identified by NHESP.

¹⁰ The Proponent's VMP takes into account not only 333 CMR 11.00 and Chapter 132B, but all applicable state and federal regulations that mandate the management of utility rights-of-way including but not limited to: all pertinent clauses in Chapter 85 of the Acts of 2000; MESA; MGL c. 131 A and 321 CMR 10.00; 310 CMR 10.00 and 310 CMR 22.00; 310 CMR 40.0000; applicable Federal Energy Regulatory Commission standards including NERC Standard FAC-003-1, Commissioner Order 693, FAC-003-2, and all applicable Federal Occupational Safety and Health Act, Department of Transportation and Department of Environmental Protection regulations.

Wetlands / Water Resources

Water resources, including 143 wetlands and 43 streams, were delineated within the project area in Spring of 2020 and Summer of 2021. According to the EENF, the project is proposed to result in temporary and permanent impacts to BVW, IVW, Inland Bank, LUW, BLSF, RFA, and associated buffer zones. As noted above, nine CVPs and four PVPs were identified within or in close proximity to the ROW. The EENF reviews the performance standards for each wetland resource area and describes the potential temporary (mats for access roads, pull pads, and work envelopes) and permanent (structure foundations, tree removal, and road stabilization material) impacts for each activity as detailed below:

- BVW: Total – 18.98 acres (temporary – 16.6 acres; permanent – 2.38 acres)
- BLSF: Total – 0.2 acres (temporary – 0.1 acres; permanent – 0.1 acres)
- RFA: Total 2.7 acres (temporary – 2 acres; permanent – 0.7 acres)
- Inland Bank (lf): Total – 233 lf (all temporary)
- Isolated Wetland: Total – 0.34 acres (temporary – 0.3 acres; permanent – 0.04 acres)
- 100-ft Buffer Zone (BZ) – 2 acres (temporary – 1 acre; permanent – 1 acre)

The project will also impact ORWs including temporary construction matting proposed within three PVPs. The eight Town Conservation Commissions will review the project for its consistency with the Limited Project provisions of the Wetlands Protections Act (WPA), the Wetland Regulations (310 CMR 10.00), and associated performance standards. MassDEP will review the project for its consistency with the 401 WQC regulations (314 CMR 9.00). The EENF states the project requires a WQC due to the permanent fill of approximately 20,358-sf of BVW for installation of structure foundations, and approximately 16.5 acres of BVW temporarily impacted by construction mats and secondary impacts due to tree removal that will alter 1.91 acres of forested wetlands converting them to scrub shrub wetlands. The EENF includes a commitment to provide wetland replication to compensate for the approximately 20,358 sf of permanent fill within BVW but does not propose replication to mitigate the 1.91 acres of permanent forested wetland conversion. Comments from MassDEP note that 1:1 wetland replication will be required for all permanent impacts to BVW. The Proponent states wetland replication locations are under review and will be monitored as required by all local, state, and federal permits. Additional information regarding mitigation for permanent wetland impacts should be provided in the Single EIR.

Chapter 91/Waterways

The project crosses several rivers and streams that are subject to waterways licensing jurisdiction by MassDEP under Massachusetts General Law c. 91 and the Waterways Regulations (310 CMR 9.00). MassDEP requires a c. 91 license for electric transmission crossings over rivers and streams even where there is no physical structure in the stream or river. The EENF states that based on field reviews, there are 17 perennial streams and 26 intermittent streams (10 which meet the definition of “normally navigable” pursuant to 310 CMR 9.04 (1)(e)) within or immediately adjacent to the ROW. The EENF states that the jurisdictional crossings listed above are exempt from c. 91 pursuant to 310 CMR 10.00 if they are covered by a final OOC and meet the following related tests: they are constructed and maintained in accordance with the National Electric Safety Code (NESC) and do not reduce the space available for navigation per (310 CMR 9.05(3)(g)). The EENF asserts that this exemption applies as all lines will have a final OOC, will comply with the NESC, and will increase in height as a result of the replacement structures.

Comments from the MassDEP Waterways Program concur that those portions of the work, which include but are not limited to, the overhead wire maintenance and replacement of overhead wire with OPGW, may be exempt from Chapter 91 licensing provided that a OOC is issued for the said work under M.G.L. Chapter 131, § 40 and 310 CMR 10.00. As to non-exempt portions, as stated in comments and pursuant to the Waterways Regulations at 310 CMR 9.12(2)(d), because the project is an infrastructure crossing facility, an infrastructure facility for which an EIR is submitted shall be determined to be water-dependent if the EEA Secretary finds that the facility cannot be reasonably located away from tidal waters based on a comprehensive analysis of alternatives and measures to minimize impacts on the environment presented during MEPA review. The Single EIR should provide an analysis in support of a finding of water-dependency and review the project's conformance with the relevant c. 91 regulatory standards.

Article 97

As stated in the EENF, 26.77 acres of the project's ROW are located within DCR property (Article 97 Land), the Breakheart Reservation in Wakefield and Saugus. The project will require off-ROW access through the Breakheart Reservation, which is currently proposed off Water Street, Hemlock Road, and Main Street. The EENF states that this off-ROW work will not result in impacts to wetland resource areas, or the need for any tree removals. Comments from DCR state that the project will require a CAP for off-ROW access from Water Street (Route 129) and Hemlock Road in Wakefield and note that any permanent changes or improvements to off-ROW access routes on DCR property will require an easement, and thus, trigger the requirements of Article 97. Additional information regarding work on DCR property is required in the Scope below.

In addition, the EENF indicates that the ROW will cross 15 additional public open space and recreation resources/Article 97 Lands in the Towns of Andover, Reading, North Reading, Lynnfield, Tewksbury, Wakefield, and Wilmington. The EENF asserts that all work proposed on these properties will be within the Proponent's existing easements and will not result in disposition of Article 97 land nor require legislation.

Transportation

According to the EENF, construction activities will intersect with the state jurisdictional highway layout at multiple locations including Interstate-93 (I-93) in Andover, Route 125 in Wilmington, and Route 128 in Wakefield. Project-related construction in these locations will require an Access Permit and/or a Utility Access Permit from MassDOT. Comments from MassDOT confirm that Permits will be required for temporary construction access, overhead wire crossings of the above listed state routes, and new access roadways proposed within the state highway right-of-way. To minimize impacts, the Proponent will develop a Traffic Management Plan for review and approval by MassDOT and will establish traffic control plans for construction traffic on busy streets, and will limit access to the ROW by installing signage and barriers (large stones) at access points from public roads. The Proponent should continue to work with MassDOT to identify required Permits and any traffic and construction management plans that may be required for temporary work within the state highway layout. The Single EIR should describe the location of all roadways under MassDOT jurisdiction and include a figure that identifies locations within the state highway layout where work or construction access will occur. It should describe the outcome of any consultation with MassDOT. The Single EIR should describe the extent of truck traffic that will result from refurbishment and tree clearing activities, including the

number of truck trips required*Historic and Archaeological Resources*

The project is subject to review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) and M.G.L. c. 9, ss. 26-27C (950 CMR 71.00). As described in the EENF, a cultural resources due diligence review was completed in the first quarter of 2021 which identified the need to perform a subsequent intensive (locational) archaeological survey. A consultant for the Proponent submitted a State Archaeologist's Permit application to the MHC in April 2022 and MHC issued a permit to conduct the survey on May 18, 2021. The Proponent conducted fieldwork and testing in 2022. Comments from MHC state that the results of the archaeological investigations identified significant or potentially significant ancient period Native American archaeological sites and note that archaeological site avoidance and protection plans are in development. The Proponent plans to perform additional required limited archaeological site examination investigations of archaeological sites that are potentially eligible for listing in the National Register of Historic Places in 2023 when ground conditions are suitable for field investigations and will file a survey report with the MHC in the 1st quarter of 2023. Comments from DCR request coordination with the DCR Staff Archaeologist related to potential archaeological resources on DCR property.

CS-16

Climate Change

The EENF describes the project as an important component in addressing climate change, noting that the proposed work will result in an improved electrical transmission system which will be more resilient to future extreme storms and will be able to meet peak demand during periods of extreme heat. The EENF describes how the proposed project complies with local climate resilient adaption strategies which identify aging infrastructure as a vulnerability and indicate the need (in community Master Plans) for improved reliability of electrical service to support economic growth and housing.

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the EENF, the project has a high exposure rating based on the project's location for extreme precipitation (urban and riverine flooding) and extreme heat. Based on the 50-year useful life identified and the self-assessed criticality of the project asset, the Tool recommends a planning horizon of 2070 and a return period associated with a 50-year (2% chance) storm event when designing the project (a "utilities" asset) for the extreme precipitation parameter. The EENF states that floodplain design standards will be followed during construction, and states that the project will result in a more climate-ready and resilient transmission system that can withstand more extreme weather events and provide improved reliability of the electric system during and after storm events. The EENF states that the replacement of existing wooden structures with stronger and more weather resistant steel structures will reduce the likelihood of downed lines occurring during storm events. The proposed tree removal along portions of the ROW will provide greater clearance between the transmission lines and the edge of ROW, reducing the risk of trees or branches falling on the lines during storm events and reconductoring along portions of the line will improve resilience to extreme heat events. The EENF indicates that caissons will be installed above the current Base Flood Elevation (BFE) associated with project waterways but does not assess how the height of structures or foundations would affect resiliency as

CS-17

measured by future storm scenarios. The Single EIR should provide additional information regarding the structures' resiliency to climate change.

Construction Period

During the construction-phase of the project there may be intermittent and localized increases in noise, dust and emissions from construction vehicles and related equipment. The EENF included a description of the Proponent's transmission line construction procedures for each project activity (tree removal, access road improvements, OPGW installation, etc.) and listed BMPs that will be implemented related to air quality, water quality, and traffic. The EENF also indicates that the project will be overseen by an Environmental Monitor, a qualified environmental professional designated by the Proponent who can capably monitor on-site construction conditions in relation to permit and regulatory requirements. The Proponent will submit a Stormwater Pollution Prevention Plan (SWPPP) for the project in compliance with the EPA's NPDES program under the Stormwater CGP. The EENF describes the type of equipment that will operate within the state highway right-of-way to install the new structures and overhead lines and to remove existing structures. The EENF did not quantify the extent of truck traffic associated with these activities but states that no impacts to surrounding residents, including secondary impacts such as increases in local traffic volumes, are anticipated as a result of the proposed project, which will be restricted to work within an existing, actively managed transmission line ROW.

All construction activities should be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management, etc.) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). All construction activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the Proponent to reuse or recycle C&D debris to the maximum extent.

SCOPE

General

The Single EIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope. Recommendations provided in this Certificate may result in a modified design that would further avoid, minimize, and/or mitigate Damage to the Environment. The Single EIR should identify measures the Proponent will include to further reduce the impacts of the project since the filing of the EENF, or, if certain measures are infeasible, the Single EIR should discuss why these measures will not be adopted.

Project Description and Permitting

- CS-20 The Single EIR should describe the project and identify any changes to the project and associated environmental impacts since the filing of the EENF. It should include updated site plans for
- CS-21 existing and post-development conditions. The Single EIR should describe alternative easements that
- CS-22 were considered and include figures that clearly identify any additional permanent and temporary easements that will be required to create access to the ROW. The plans and narrative provided in the Single EIR should identify the extent of any off-ROW clearing required for access road construction.
- CS-23 The Single EIR should provide a brief description and analysis of all applicable statutory and regulatory standards and requirements and describe how the project will meet those standards. It should include a list of required Agency Permits, Financial Assistance, or other state or local approvals and
- CS-24 provide an update on the status of each. Comments from the Northern Middlesex Council of Governments (NMCOG) noted that their office and the Town of Tewksbury had not been properly notified of the EENF filing. The Proponent should confirm that the distribution list for the Single EIR is correct and that the Town of Tewksbury and NMCOG are included in the distribution.

Alternatives Analysis

- CS-25 The Single EIR should include an expanded alternatives analysis focused on the area between structures 91-98 that provides full justification for dismissing relocating the line to the north and installation of alternative structures that avoid and minimizes environmental impacts and tree clearing within sensitive resource areas such as potential vernal pools, BVW, and rare species habitat. As noted in the EENF, clearing outside of the ROW (and securing new easements with landowners) is proposed in other locations and should be further explored between structures 91 to 98 where sensitive resource
- CS-26 areas might be avoided. The Single EIR should quantify environmental impacts and provide a conceptual plan for these alternatives. It should compare the environmental impacts with the Preferred Alternatives, in particular, with respect to land alteration, wetland resource areas, potential vernal pools,
- CS-27 rare species habitat, and archaeological resources. The Single EIR should describe how more vegetation could be preserved in sensitive areas between structures 91-98 and should consider and describe opportunities to vary the width of the clearing particularly in locations where the topography is low, and transmission wires are high such that tree clearing in wetland resource areas might be minimized.

Land Alteration

- CS-28 As noted above, the EENF states tree removal will be required beyond the scope covered by the VMP in both off-ROW and within ROW locations to get as close as possible to meeting the 49-ft clearance threshold (outer conductor to edge of ROW). This additional tree clearing will be permanent and will be maintained as part of future VMP maintenance but is not included in the reported permanent land alteration impacts. The Single EIR should document the land alteration that will occur as a result of the additional tree clearing and permanent conversion of forested area to shrub/scrub area. Land alteration should also include any clearing that may be required off-ROW to improve/widen existing such as the cart path (in North Reading) or construct new access roads. Off-ROW impacts to wetlands should also be included and updated as part of Wetland Resource Area impacts below.

Rare Species

- CS-29 The Single EIR should provide an update on potential impacts to state-listed rare species habitat,

including the acreage of Priority Habitat both on- and off- ROW impacted by the project. The Single EIR should identify proposed measures to avoid, minimize and mitigate those impacts. I refer the Proponent to comments from NHESP for additional guidance on this issue, including potential conditions anticipated to be required to avoid a Take of state-listed species.

- CS-30 The Single EIR should address the comments from the Franklin Regional Council of Governments (FRCOG) which identify a concern regarding potential impacts to rare species within the project site, especially as it relates to changes in the breeding season due to climate change.

Wetland Resource Areas

- CS-31 The Single EIR should ensure that estimates for impacts to wetland resource areas are conservative and account for all temporary and off-ROW impacts. The EENF (Table 5) combines
 CS-32 impacts to the Buffer Zone to BVW with Inland Bank. The Single EIR should describe to what extent the construction matting would necessitate alteration of Bank or LUW. The Single EIR should detail the
 CS-33 amount of Bank impact at each location and further describe the restoration process. As noted above, prior to submitting the Single EIR, the Proponent should analyze the PVPs to determine whether they are eligible to be certified (including the three potential vernal pools that will be impacted). The results of this analysis should be presented in the Single EIR. In addition, the Proponent should evaluate areas of tree clearing between structures 91-98 to identify any additional PVPs, as an unidentified PVP was
 CS-34 noted on the MEPA site walk on January 25, 2023. As noted above, the Single EIR should describe efforts to avoid, minimize, and mitigate impacts especially between structures 91-98. Comments from MassDEP assert that wetland replication will be required for permanent impacts to BVW including for fill associated with replacement structures and tree clearing and should be included as part of the Notice of Intent in each community. The Single EIR should include a commitment to provide this replication including identification of approximate locations if available.

Chapter 91

- CS-35 The Single EIR should provide additional information regarding which portions of the project cannot be located or operated away from Meadow Brook, Shawsheen Brook, Martins Brook, Martins Brook Pond, the Saugus River, and the unnamed waterways which are non-tidal, navigable rivers/streams subject to jurisdiction pursuant to c. 91 and the Waterways Regulations. The analysis provided in the Single EIR should support a finding of water-dependency as required by 310 CMR 9.12(2)(d) and review the project's conformance with the relevant c.91 regulatory standards (if
 CS-36 applicable). The Proponent should schedule a pre-application consultation with MassDEP Waterways as requested in comments and should provide an update on coordination in the Single EIR.

Article 97

- CS-37 As noted previously, the project includes access from Water Street and Hemlock Road in Wakefield, outside of the ROW, to enable access through DCR forest land. The Proponent indicates that it may have existing rights to access the ROW through DCR property; however, as indicated in comments from DCR, additional information is needed to determine if new permanent easements are required which would require disposition of state-owned land protected by Article 97 of the Amendments to the Massachusetts Constitution. As requested by DCR, the Single EIR should include verification of the deeded easements for the ROW within Breakheart reservation by either including a copy of the easement document(s) or the registry book and page reference(s).

If required, a disposition of a property interest over this land requires approval by a 2/3rds vote of the legislature, and compliance with the Executive Office of Energy and Environmental Affairs (EEA) Article 97 Land Disposition Policy (the Article 97 Policy) and new M.G.L. c. 3, s. 5A. The Article 97 Policy was established to ensure No Net Loss of public conservation lands under the ownership and control of the Commonwealth. It provides for transfer of ownership or interests in Article 97 Land only under exceptional circumstances. The Policy establishes six criteria for determining when “exceptional circumstances” exist such that a disposition of Article 97 land may be appropriate. These include:

- The Proponent of the disposition must conduct an analysis of alternatives, commensurate with the type and size of the proposed disposition, that achieve the purpose of the disposition without the use of Article 97 land, such as the use of other land available within the appropriate market area;
- The disposition of the subject parcel and its proposed use may not destroy or threaten a unique or significant resource (e.g., significant habitat, rare or unusual terrain, or areas of significant public recreation);
- Real estate of equal or greater value, and of significantly greater resource value is granted to the disposing agency;
- The minimum necessary area of Article 97 should be included in the disposition and the existing resources continue to be protected to the maximum extent possible;
- The disposition serves an Article 97 purpose or another public purpose without detracting from the mission, plans, policies and mandates of EEA and its appropriate department or division; and
- The disposition is not contrary to the express wishes of the person(s) who donated or sold the parcel or interests to the Commonwealth.

CS-38

The Single EIR should identify impacts (temporary and permanent) to Article 97 Land and proposed measures to avoid, minimize and mitigate impacts. The alternatives analysis and proposed mitigation in the Single EIR should address compliance with each of the six criteria identified above (as required). The Proponent is directed to consult with DCR regarding the applicability of Article 97 prior to filing the Single EIR.

CS-39

As noted above, work activities on DCR property outside of existing easements associated with the ROW, or requiring access across DCR property, will require a CAP. As requested in comments, the Proponent should coordinate with DCR’s Senior Ecologist and Staff Archaeologist related to wetlands, rare species habitat, and potential archaeological resources, including the amount of proposed tree clearing within the state forest sections of the ROW, and along access routes identified by the Proponent.

Historic and Archaeological Resources

CS-40

The EENF indicates that the Proponent will file a survey report with the MHC in the first quarter of 2023 and will be developing measures to minimize or mitigate adverse effects to historic and archaeological resources. The Single EIR should provide an update on coordination with MHC.

Climate Change

CS-41

While the EENF describes the general resiliency benefits of the project achieved by updating aging infrastructure to current design standards, it does not specifically address the design

CS-42 recommendations from the MA Resilience Design Tool. The Single EIR should include a narrative explaining whether proposed infrastructure improvements will make the project assets more resilient to risks associated with riverine flooding from a 50-year (2%) storm event estimated as of 2070. The Single EIR should discuss the extent to which existing electrical lines are exposed to riverine flooding, and what measures the Proponent is taking to improve asset resiliency over a longer-term horizon. In particular, the Single EIR should discuss whether new foundations are being elevated above any defined base flood elevations or other similar water/flood elevation measure to ensure that the structures are CS-43 resilient to future flooding risks. Where impervious/semi-pervious area is created and stormwater management is required, the Single EIR should address the recommendations from the MA Resilience Design Tool, including whether the stormwater management designs will be resilient to future climate CS-44 conditions including the 50-year (2% chance) storm as of 2070 (9.5 inches). The Single EIR should further describe mitigation in areas of access road creation where there are steep slopes and severe erosion potential including temporary and permanent stabilization methods.

Mitigation and Section 61 Findings

CS-45 The EENF included draft Section 61 Findings and proposed mitigation measures. The Single EIR chapter should include an updated comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the impacts of the project. The Single EIR should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.

Responses to Comments

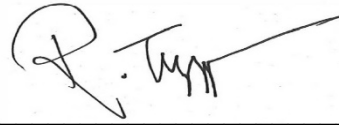
CS-46 The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. It should include a comprehensive response to comments on the EENF that specifically address each issue raised in the comment letter; references to a chapter or sections of the Single EIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response. This directive is not intended to, and shall not be construed to, enlarge the Scope of the Single EIR beyond what has been expressly identified in this certificate.

Circulation

CS-47 The Proponent may circulate copies of the Single EIR to commenters other than Agencies in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis. A copy of the Single EIR should be made available for review in the Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus Public Libraries.

February 17, 2023

Date



Rebecca L. Tepper

Comments received:

02/02/2023	Massachusetts Historical Commission (MHC)
02/10/2023	Massachusetts Department of Conservation and Recreation (DCR)
02/10/2023	Massachusetts Department of Environmental Protection (MassDEP) Waterways Program
02/10/2023	MassDEP, Northeast Regional Offices (NERO)
02/15/2023	Massachusetts Division of Fisheries and Wildlife (DFW) Natural Heritage and Endangered Species Program (NHESP)
02/10/2023	Northern Middlesex Council of Governments (NMCOG)
02/13/2023	Massachusetts Department of Transportation (MassDOT)

RLT/JAH/jah



February 1, 2023

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

Tammy R. Turley
Chief, Regulatory Branch
US Army Corps of Engineers
696 Virginia Rd
Concord, MA 01742-2751

RE: National Grid New England Power Co. Lines 339/349 Asset Condition Refurbishment Project, Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus, MA. PAL #3872.01. EEA #16647. **MHC #RC.69692.**

Dear Ms. Turley:

Staff of the Massachusetts Historical Commission (MHC) have reviewed the two-volume technical report, *Intensive (Locational) Archaeological Survey, New England Power Co. Lines 339/349 Asset Condition Refurbishment Project, Tewksbury, Andover, Wilmington, North Reading, Lynnfield, Wakefield, and Saugus, Massachusetts*, prepared by The Public Archaeology Laboratory, Inc. (PAL) for the project referenced above.

The PAL's transmittal letter indicates that a copy of the technical report was provided to the Corps, to Tribal Historic Preservation Officers, and to the Massachusetts Department of Conservation & Recreation (DCR). The MHC is interested to learn the views of other consulting parties pertaining to the significance and proposed treatment of the historic and archaeological properties in the project area of potential effects.

An expanded Environmental Notification Form (ENF) for the project has been submitted to the Massachusetts Executive Office of Energy & Environmental Affairs (EEA), MEPA office. The ENF summarizes the status of the identification and evaluation studies for historic and archaeological properties and the consultations that have occurred, and indicates that the project proponent is continuing to gather and analyze information to develop a treatment plan to be implemented to avoid, minimize, or mitigate adverse effects.

The results of the archaeological investigations identified significant or potentially significant ancient period Native American archaeological sites. These include Heather Row (19-MD-1134) and Bligh Street (19-MD-1133) in Tewksbury; Shawsheen Overlook II in Andover; Rat Snake (19-MD-1137) and Talking Hawk (19-MD-1229) in North Reading; Montrose Terrace (19-MD-732), Briarwood South (19-MD-1060), and Windy Ridge in Wakefield; Breakheart #1 (19-ES-673) and a reported Native-quarried rhyolite outcrop (located in the vicinity of the Harmon Road Findspot [19-ES-844] and the Harmon Road Site) in Saugus.

The survey also identified archaeological sites that do not appear to the staff of the MHC to meet the Criteria of Eligibility for listing in the National Register of Historic Places (36 CFR Part 60.4) because they either lack archaeological integrity or have limited historical and archaeological research value. These include STR 11 Findspot in Tewksbury; Martins Brook (19-MD-1136), STR 73 Findspot, and the portion in the project area of the North Reading Municipal Station (19-MD-1140) in North Reading;

Chestnut Street Findspot in Lynnfield; Powerline (19-MD-733) in Wakefield; Harmon Road, Juniper Drive, Golden Hills, and North of Howard Street (SAU-HA-19) in Saugus.

The project area includes many other previously identified significant or potentially significant historic and archaeological resources in the project area environs. Avoidance and protection plans should be developed in consultation, and implemented for previously identified significant or potentially significant historic and archaeological resources that could otherwise be adversely affected during implementation of the project.

The PAL indicates that archaeological site avoidance and protection plans are in development. The PAL also indicates that a study of historic architectural properties in the project area of potential effects is forthcoming.

MHC-1

When the applicant has considered and developed feasible measures to avoid and protect significant or potentially significant historic and archaeological properties, and the identification and evaluation efforts are completed, the MHC looks forward to receiving the Corps' findings and determinations for the project and to participating with other consulting parties to reach agreement to resolve any adverse effects to historic and archaeological properties.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71), and MEPA (301 CMR 11). If you have questions, please contact Edward L. Bell, Deputy State Historic Preservation Officer and Senior Archaeologist at the MHC.

Sincerely,



Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc:

Andrew Cole, New England Power
Michael Retter, New England Power
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
David Weeden, Mashpee Wampanoag Tribe
Secretary Rebecca Tepper, EEA, Attn. Jennifer Hughes, MEPA
Jonathan K. Patton, Mass. DCR
Alison Milliman, BSC Group, Inc.
Deborah C. Cox, PAL



Department of Environmental Protection

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Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

Memorandum

To: Jennifer Hughes, Environmental Analyst, MEPA/EEA

From: Ivan Morales, Waterways Regulation Program, MassDEP/Boston

Cc: Daniel Padien, Program Chief, Waterways Regulations Program, MassDEP/Boston

Re: **Comments from the Chapter 91 Waterways Regulation Program–
EENF, 339/449 Line Asset Condition Refurbishment (ACR) Project, EEA #16647**

Date: February 10, 2023

The Department of Environmental Protection Waterways Regulation Program (the “Department”) has reviewed the above referenced Expanded Environmental Notification Form (EENF) (EEA #16647), submitted by the BSC Group, Inc. on behalf of National Grid d/b/a New England Power Company (“the Proponent”) for the refurbishment of a transmission line, in rights-of-way and stream crossings within waters of the Meadow Brook, Shawsheen Brook, Martins Brook, Martins Brook Pond, the Saugus River, and some unnamed waterways, in the Towns of Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus, Middlesex and Essex Counties (the “project site”).

Chapter 91 Jurisdiction:

DEP-1

The Department has determined that sections of the Meadow Brook, Shawsheen Brook, Martins Brook, Martins Brook Pond, the Saugus River, and some unnamed waterways are non-tidal, navigable rivers/streams subject to jurisdiction pursuant to M.G.L Chapter 91 and the Waterways Regulations, per 310 CMR 3.04(1)(e). While all work located landward of the ordinary high water mark of said waterways is located outside of Chapter 91 jurisdiction and not subject to licensing thereto.

Water Dependency:

Because this project is an infrastructure crossing facility as defined at 310 CMR 9.02, the Department will determine if said project is water-dependent or not until such time the submission of an Environmental Impact Report (EIR) is required, and subsequently the Secretary

has determined that portions of the proposed project and ancillary facilities thereto cannot be located or operated away from the streams mentioned above, pursuant to 310 CMR 9.12(2)(d).

Chapter 91 Regulatory Analysis:

In the EENF, the Proponent proposes refurbishment activities within the 339/349 line rights-of-way that connects the Tewksbury #22A Sub-station (Tewksbury) and the Golden Hills Sub-Station (Saugus). The said transmission line extends 17.25 miles traversing the Towns of Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, and Saugus. The project also includes:

- 79 direct embed and 19 caisson supported structure replacements;
- Installation of 5 new direct embed structures and 7 new caisson supported structures;
- Overhead wire maintenance and repair of existing structures;
- Replacement of overhead wire with optical ground wire;
- Tree removal and access road.

The portions of the project site landward of the ordinary high water mark, specifically, replacement and installation of the new embed and caisson supported structures, repair of existing structures, and tree removal and access road, is considered “uplands” and is not a geographical area subject to Chapter 91 jurisdiction, as defined at 310 CMR 9.04.

DEP-2 Pursuant to 310 CMR 9.05(3)(g)(1), The Department determines that portions of said work, which includes but is not limited to, the overhead wire maintenance and replacement of overhead wire with optical ground-wire may be exempt from Chapter 91 licensing provided that a final Wetlands Order of Conditions is issued for the said work under M.G.L. Chapter 131, § 40 and 310 CMR 10.00.

DEP-3 The Department recommends that the Proponent schedules a pre-application consultation as the project design phases are completed, pursuant to 310 CMR 9.11(1).

If you have any questions regarding the Department’s comments, please contact Ivan Morales at (857) 276-3013 or Ivan.Morales@mass.gov



February 9, 2023

Secretary Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
Attn: Jennifer Hughes, MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: EEA#16647 – 339/349 Line Asset Condition Refurbishment (ACR) Project EENF

Dear Secretary Tepper:

The Department of Conservation and Recreation (“DCR” or “the Department”) is pleased to submit the following comments in response to the Expanded Environmental Notification Form (“EENF”) filed by the New England Power Company (“NEP” or the “Proponent”) for the proposed 339/349 Line Asset Condition Refurbishment (ACR) Project (the “Project”) in Tewksbury through Saugus.

NEP proposes to conduct Asset Condition Refurbishment activities along the 339/349 Line ROW. Refurbishment includes structure replacement, new structure installation, overhead maintenance and repair of existing structures, replacement of overhead wires with optical groundwire, tree removal in select areas, and access road and work envelope improvements to facilitate the work.

A portion of the ROW passes through Breakheart Reservation in Wakefield and Saugus. The ROW is part of Breakheart Reservation and is protected under Article 97 of the Amendments to the Massachusetts Constitution. DCR requests verification of deeded easements for the ROW within Breakheart Reservation, by providing DCR with a copy of the easement document(s) or the registry book and page reference(s).

The EENF indicates that the Project will require a Construction and Access Permit (“CAP”) from DCR for off-ROW access from Water Street (Route 129) and Hemlock Road in Wakefield. Hemlock Road is a historic Reservation Parkway, listed in the State and National Registers. DCR requests that the Proponent provide additional information about rights to and planned use of the access routes over DCR land, including what, if any, work is proposed, and whether access will be needed after construction is complete. Any permanent changes or improvements to off-ROW access routes on DCR property will require an easement and, thus, trigger the protections of Article 97.

Please note that transfers of interests in state conservation property must meet the requirements set forth in the Executive Office of Energy and Environmental Affairs’ (“EEA”) Article 97 Land Disposition Policy (the “Policy”). The Policy has the stated goal of ensuring no net loss of lands protected under Article 97 and states as a general premise that EEA and its agencies shall not sell, transfer, or otherwise dispose of any right or interest in such lands. Transfer of ownership or interests therein may occur only under exceptional circumstances, as defined in the Policy, including the determination that no feasible alternative is available, and a minimum amount of land or an interest therein is being disposed for the proposed use. Such a transfer also

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Maura T. Healey
Governor
Kimberley Driscoll
Lt. Governor

Rebecca L. Tepper, Secretary
Executive Office of Energy & Environmental Affairs
Douglas J. Rice, Commissioner
Department of Conservation & Recreation

requires legislative authorization by the General Court through a two-thirds supermajority roll call vote. Additionally, with the recent passage of St. 2022, c. 274 (codified at M.G.L. c. 3, § 5A) – commonly known as the Public Lands Preservation Act – additional requirements may apply to a transfer of Article 97 property.

Natural, Cultural and Recreational Resources

DCR-3 DCR requests coordination with DCR's Staff Archaeologist related to potential archaeological resources, and
DCR-4 with DCR's Staff Ecologist related to wetlands, rare species habitat, and proposed tree removal within sections
of the ROW in Breakheart Reservation. DCR requests that trees identified for removal be flagged. The
DCR-5 Ecologist will review the flagged work limits and work with the Proponent to identify mitigation for the
removal of trees and the conversion of habitat. The Staff Archaeologist will coordinate with the Proponent and
DCR-6 their cultural resource consultant to develop and implement measures to avoid, minimize, or mitigate adverse
effects to significant historic and archaeological resources within DCR property. We look forward to reviewing
specific protection and restoration measures to be implemented for sensitive natural and cultural resources on
public conservation lands. Environmental permits for work activities on DCR land must be signed by the
DCR-7 Department as 'Owner' following review by DCR staff members and prior to submission to regulatory
agencies.

Thank you for the opportunity to comment on the EENF. Please contact staff Archaeologist Jonathan Patton at jonathan.patton@mass.gov regarding cultural resource stewardship. Please contact staff Ecologist Megan Shave at megan.shave@mass.gov regarding natural resource stewardship. Please contact Land Protection Specialist Christine Berry at christine.berry@mass.gov regarding ROW easement documentation. Please contact Sean Grant at sean.grant@mass.gov to request a CAP.

Sincerely,

Douglas Rice

Douglas J. Rice
Commissioner

cc: Priscilla Geigis, Patrice Kish, Tom LaRosa, Jennifer Howard, Christine Berry, Jonathan Patton, Megan Shave, Anthony Guthro



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

February 10, 2023

Rebecca L. Tepper, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Tewksbury and other communities
339/349 Line Asset Condition refurbishment
(ACR) Project
EEA # 16647

Attn: MEPA Unit

Dear Secretary Tepper:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Expanded Environmental Notification Form (EENF) for the proposed 339/349 Line Asset Condition Refurbishment (ACR) Project in Tewksbury and several other communities. MassDEP provides the following comments.

Wetlands

The proposed work includes Asset Condition Refurbishment (ACR) activities along the 339/349 Transmission Line right-of-way (ROW) between the Tewksbury #22A Sub-station (Tewksbury), and the Golden Hills Sub-station (Saugus), in Massachusetts. The 339/349 Line ROW runs for approximately 17.25 miles, transecting the Towns of Tewksbury, Andover, Wilmington, North Reading, Lynnfield, Wakefield, and Saugus, Massachusetts. This work is referred to as the 339/349 Line Asset Condition Refurbishment Project or “339/349 ACR”. The scope of the Project includes the complete refurbishment of the existing transmission line. Refurbishment activities will include structure replacements, new structure installations, overhead maintenance and repair of existing structures, replacement of overhead wires with optical ground wire (OPGW), tree removal in select areas, and access road and work envelope improvements to facilitate the work. No change in the capacity of the lines is proposed. The Project will result in a

This information is available in alternate format. Please contact Melixza Esenyie at 617-626-1282.

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more reliable, climate-ready, and resilient transmission system, that can withstand more extreme weather events.

In addition, NEP is proposing to realign a portion of the 339/349 Line in North Reading, Reading, and Lynnfield, in order to meet NEP's safety standards for the required clearance between the line and the edge of the ROW. This line realignment will include tree removals to widen the ROW corridor between the existing 339 and the S145/T146 Line.

The EENF describes approximately 16.6 acres of temporary impacts to Bordering Vegetated Wetlands (BVW) associated with construction mats for access roads where BVW cannot be avoided along the line. The project also includes approximately 2.38 acres of permanent impacts to BVW associated with fill for the replacement structures within BVW and tree removal associated with general line realignment.

NERO-1

Wetland replication will be required for permanent impacts to BVW. The Notice of Intent should include a wetland replication plan demonstrating that there is at least 1:1 replication of permanently impacted BVW.

There is minimal work proposed within Riverfront Area, Bordering Land Subject to Flooding, Isolated Vegetated Wetlands, and within the 100' buffer zone to BVW and Inland Bank.

NERO-2

The project will require an Order of Conditions issued by the local Conservation Commission and will require a 401 Water Quality Certification for impacts to Vegetated Wetlands greater than 5,000 square feet.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Kristin.Divris@mass.gov at (508) 887-0021 for further information on wetlands issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@mass.gov or at (857) 276-3161.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission,
Eric Worrall, Kristin Divris, Jill Provencal, MassDEP-NERO



Northern Middlesex Council of Governments

February 10, 2023

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Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Jennifer Hughes: EOEEA #16647
100 Cambridge Street, Suite 900
Boston, MA 02114-2509

RE: EOEEA #16527/NMCOG #689 – Asset Conditioning Refurbishment 339-349
Transmission Line Right of Way

Dear Secretary Tepper:

The Northern Middlesex Council of Governments (NMCOG) has reviewed the Expanded Environmental Notification Form (EENF) for the cross-jurisdiction Asset Conditioning Refurbishment project along the 339-349 Transmission Line Right of Way (ROW) between Tewksbury and Saugus. The New England Power (NEP) Company is proposing the complete refurbishment of the existing transmission line, and will include work such as: structure replacements, new structure installations, overhead maintenance and repair of existing structures, replacement of overhead wires with optical ground wire, tree removal in select areas, and access road and work envelope improvements. The development will take place along 653.62 acres, including 2.33 acres of newly altered land, with a moderately level topography throughout and hilly terrain on the eastern end of the ROW. The plant communities along the maintained portion of the ROW are best described as closed-scrub and open heath interspersed with herbaceous pioneering plants. The stretch of undeveloped land included in the ROW is composed of typical southern New England transitional upland forest and forested wetland. The project area includes Bordering Vegetated Wetland (BVW), Bordering Land Subject to Flooding (BLSF), Inland Bank (IB), Land Under Water (LUW), and Riverfront Area (RA). Field delineations along the project ROW identified a total of 143 wetland areas, 17 perennial streams and rivers, 26 intermittent streams, and 6 Certified Vernal Pools. Construction is estimated to take place between Q1 2025 and Q2 2026.

The project triggers MEPA review as it trips the following thresholds:

- **301 CMR 11.03(2)(2)(b)**- Greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern.
- **301 CMR 11.03(3)(a)(1)(a)** - Alteration of one or more acres of bordering vegetating wetlands.

- **301 CMR 11.03(3)(b)(1)(d)**- Alteration of 5,000 or more sf of bordering or isolated vegetated wetlands.
- **301 CMR 11.03(3)(b)(1)(f)**- Alteration of ½ or more acres of any other wetlands
- **301 CMR 11.03(11)(b)**- Any Project within a designated ACEC, unless the Project consists solely of one single family dwelling.

The project requires the following permits:

- Massachusetts Department of Environmental Protection (MassDEP) Section 401 of the Clean Water Act, Individual Water Quality Certificate
- Massachusetts Endangered Species Act Conservation Management Permit (to be determined)
- Massachusetts Department of Transportation (MassDOT) Permit to Access State Highway/Non-Municipal Utility Permits of Crossing Over of State Roads with Utility Lines and Permanent Access Permit
- MassDEP Superseding Order of Conditions (if any Order of Conditions is appealed)
- Department of Conservation and Recreation (DCR) Construction Access Permit (CAP)

The purpose of this project is to develop a more reliable, climate-ready, and resilient transmission system through a complete refurbishment of the existing transmission line, and a realigning of a portion of the existing 339/349 line. This will result in a system that can withstand more extreme weather events and meet NEP's safety standards for clearance required between the line and the edge of the ROW. The project activities will result in an estimated total of 4.18 acres of permanent impact within the ROW, which include land use changes and the construction of access roads, work pads, and caisson supported structures. Temporary impacts associated with construction will occur over 16.5 acres of land within the ROW, including land within wetlands. According to the NEP, this project has been designed to avoid adverse impacts, and proposed mitigation strategies were designed to minimize the impacts on land use, wetlands, wildlife, and rare species.

Based on the information provided within the EENF, project alternatives have been considered and the analysis has shown that NEP has moved forward with the project alternative that achieves the project's goals and benefits while minimizing the negative impacts on the surrounding environment and its inhabitants. However, given the extent of the project and impact area, as well as the diverse species that live within, NMCOG remains concerned about the mitigation activities proposed by the consultant. Specifically, various studies and meta-analyses in the field of phenology have shown that climate change is impacting the duration, onset, and end of cyclical and seasonally occurring natural phenomena, including breeding seasons. Observed shifts have included lengthening, shortening, delaying, and prolonging of breeding seasons in species across the globe. Given the extensive availability of this knowledge and the growing importance of phenology in the context of climate change, NEP needs to conduct additional studies to analyze the breeding seasons of the rare species within the project site. Additionally, NEP should consider including additional time buffers to the species-specific "sensitive dates," to ensure that impacts are minimized. Furthermore, NMCOG recommends that NEP develop procedural guidelines on construction if surveys in a given location find that there are significant signs of critical seasonal activity, such as nesting, outside of the sensitive dates. If the above guidelines and procedures exist, NMCOG recommends that NEP and affiliates communicate them to all parties involved in this project as soon as possible.

NMCOG-1

NMCOG-2

NMCOG-3

NMCOG recognizes the importance of this project in providing reliable electricity and updating infrastructure to withstand the effects of climate change. Though the EENF comprehensively analyses the purpose, impacts, and proposed mitigation strategies, the consultant has failed to effectively engage

all the affected communities in providing feedback on the proposed project. Despite being contacted by a representative from BSC Group, Inc., to confirm a point of contact, notice of the remote consultation session and site visit were sent to an inactive email and failed to include any representatives from the Town of Tewksbury. The consultant and MEPA managers need to ensure that future communications about the project, including remote consultation sessions, site visits, and expanded notifications, are reaching all necessary parties, including *active* staff from the Town of Tewksbury and Northern Middlesex Council of Governments. Given the lack of appropriate engagement and a need to consider more comprehensive mitigation strategies that are cognizant of climate change impacts on phenology, further review under the MEPA process appears necessary.

NMCOG-4

NMCOG-5

Should you have any questions regarding the NMCOG staff comments please feel free to contact me or Daniela Garcia Moreno, Sustainability Planner, respectively at jraitt@nmcog.org or dgarciamoreno@nmcog.org.

Sincerely,

Jennifer Raitt
Executive Director

cc: Daniela Garcia Moreno, Sustainability Planner
Andrew Deslaurier, Chair, NMCOG Council



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Gina Fiandaca, Secretary & CEO



February 13, 2023

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Tewksbury et al – 339/349 Asset Condition Refurbishment Project
(EEA #16647)

ATTN: MEPA Unit
Jennifer Hughes

Dear Secretary Tepper:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Expanded Environmental Notification Form filed for the proposed 339/349 asset condition refurbishment project starting in Tewksbury and running through Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, & Saugus as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavalley, P.E., Chief Engineer, Highway Division
Paul Stedman, District 4 Highway Director
James Danila, P.E., State Traffic Engineer
North Middlesex Council of Governments (NMCOG)
Merrimack Valley Council of Governments (MVCOG)
Metropolitan Area Planning Council (MAPC)



Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Gina Fiandaca, Secretary & CEO



MEMORANDUM

TO: David J. Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E., Manager
Public/Private Development Unit

DATE: February 13, 2022

RE: Tewksbury et al – 339/349 Asset Condition Refurbishment Project
(EEA #16647)

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the 339/349 Asset Condition Refurbishment Project (the “Project”) starting in Tewksbury and running through Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield, & Saugus by BSC Group, Inc. on behalf of New England Power Company (the “Proponent”). The Project entails the refurbishment of existing overhead electrical utility lines, including replacing existing infrastructure, trimming vegetation, and in some cases providing new maintenance access drives. The overhead lines to be refurbished in this Project run from the Tewksbury #22A Sub-station to the Golden Hills sub-station in Saugus for a total distance of 17.5 miles.

The Project surpasses MEPA thresholds for review of an Environmental Notification Form (ENF) and an Environmental Impact Report (EIR) due to impacts on wetlands per 301 CMR 11.03(3). The Project additionally requires an ENF due to impacts on priority habitat per 301 CMR 11.03(2), areas of critical environmental concern per 301 CMR 11.03(11), and land per 301 CMR 11.03(1). The Project also requires an Environmental Impact Report (EIR) per 301 CMR 11.06(7)(b) as the utility route intersects several Designated Geographic Areas surrounding Environmental Justice (EJ) Populations.

DOT-1

The Project route will intersect with the state jurisdictional highway layout at multiple locations, including I-93 in Andover, Route 125 in Wilmington, and Route 128 in Wakefield. Project-related construction in these locations will require a temporary access permit for construction activities and/or a utility access permit issued by MassDOT District 4. Further

DOT-2

MassDOT permits will be required for temporary construction access, overhead wire crossings of the above-listed state routes, and new access roadways proposed within the state highway right-of-way. As the utility line already exists in place, no additional impacts on the state jurisdictional right of way are anticipated after Project completion.

Once completed, the Project is not expected to result in additional vehicle trips on an average weekday, except for the occasional or yearly maintenance activities. MassDOT does not anticipate that these activities would significantly impact the transportation system and

DOT-3

offers no objection to the requested waiver of Draft and Final EIR submissions for the purpose of environmental review. The Proponent should coordinate with MassDOT District 4 to minimize traffic disruption during Project construction and prevent impacts on state jurisdictional roadways. If you have any questions regarding these comments, please contact *Curtis.B.Wiemann@dot.state.ma.us*.

Hughes, Jennifer (EEA)

From: Glorioso, Lauren (FWE)
Sent: Wednesday, February 15, 2023 4:14 PM
To: Hughes, Jennifer (EEA)
Cc: Cheeseman, Melany (FWE)
Subject: EEA 16647, EENF, National Grid 339/349 ACR Project, NHESP 22-41435

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Jennifer Hughes, EEA No. 16647
100 Cambridge Street
Boston, Massachusetts 02114

Project Name: 339/349 Asset Condition Refurbishment (ACR) Project
Proponent: New England Power Company d/b/a National Grid
Location: Existing Right-of-way from Power Company Road (Tewksbury) to Howard St. (Saugus);
Tewksbury, Andover, Wilmington, North Reading, Reading, Lynnfield, Wakefield & Saugus
Project Description: Complete refurbishment of existing transmission line infrastructure, including access roadway improvements
Document Reviewed: Expanded Environmental Notification Form
EEA File Number: 16647
NHESP Tracking No.: 22-41435

Dear Secretary Tepper:

The Natural Heritage & Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife (the Division) has reviewed the *Expanded Environmental Notification Form* (EENF) for the “339/349 Asset Condition Refurbishment Project” (the “Project”) and would like to offer the following comments regarding state-listed species and their habitats.

According to the information provided in the EENF and the *Massachusetts Natural Heritage Atlas* (15th Edition), portions of the Project site are mapped as *Priority* and *Estimated Habitat* for state-listed species, including Blue-spotted Salamander (*Ambystoma laterale* pop. 1; Special Concern), Eastern Red Bellied Tiger Beetle (*Cicindela rufiventris*; Threatened);, Northern Long Eared Bat (*Myotis septentrionalis*; Endangered^[1]), and several state-listed moths and marsh-nesting birds. These species and their habitats are protected pursuant to the Massachusetts Endangered Species Act (MGL c.131A) and its implementing regulations (MESA; 321 CMR 10.00). Fact Sheets for state-listed species can be found on our website, www.mass.gov/nhesp.

The Proponent engaged the Division in pre-filing consultations to discuss the Project and opportunities to avoid and minimize impacts to state-listed species and their habitats. Based on a review of information that was submitted and the information contained in our database, on February 15, 2023, the Division determined that the proposed project must be conditioned in order to avoid a Take of state-listed species. These conditions include but are not limited to timing restrictions and protective measures for placement and removal of construction matting within Priority Habitat. Provided all conditions are implemented and there are no changes to the project plans, this project will not result in a Take of state-listed species or require a MESA Conservation & Management Permit to proceed. Please contact me if you have any questions or need additional information. We appreciate the opportunity to comment on the Project.

NHESP
-1

Sincerely,

Lauren Glorioso (she/her)

Endangered Species Review Biologist

Natural Heritage & Endangered Species Program

Division of Fisheries & Wildlife

1 Rabbit Hill Road, Westborough, MA 01581


c: (508) 281-9909 | o: (508) 389-6361 | f: (508) 389-7890

mass.gov/masswildlife | facebook.com/masswildlife

^[1] Northern Long Eared Bat is under review for listing by the federal Endangered Species Act of 1973 (16 USC §§1531-1544) administered by the United States Fish & Wildlife Service.

Attachment C

BEST MANAGEMENT PRACTICES

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		Date:	08/06/2020
SUBJECT ROW Access, Maintenance and Construction Best Management Practices for New England		REFERENCE EP-3; Natural Resource Protection	

PURPOSE/OBJECTIVE:

This document provides National Grid personnel, consultants and contractors with Best Management Practices (BMPs) for conducting work on electric and natural gas transmission and distribution rights-of-ways (ROWs) and substations in New England.

WHO:

These BMPs are to be followed by all personnel conducting work on Company electric and gas ROWs and substations in New England. These BMPs do not apply to Company employees and contractors performing routine vegetation management activities that are not a part of construction or re-construction projects. Employees and contractors maintaining vegetation on Company ROWs and substations must follow the National Grid ROW Vegetation and Substation Vegetation Management Plans.

DEFINITIONS:

Refer to **Glossary** in **Appendix 1** and **Acronyms** in **Appendix 2**.

WHAT TO DO:

1.0 Project Planning

Prior to the start of any project (proposed new facilities or maintenance of existing facilities), the Project Engineer or other project planner shall determine whether any environmental permits or approvals are required, per the state-specific EG-301 environmental checklists. Any questions regarding which activities may be conducted in regulated areas or within environmentally sensitive areas shall be referred to the National Grid Environmental Scientist or Project Environmental Consultant.

All new construction and maintenance projects shall follow clear and enforceable environmental performance standards, which is the purpose for which these BMPs have been compiled.


1.1 Avoidance and Minimization

Measures shall always be taken to avoid impacts to wetlands, waterways, rare species habitats, known below and above ground historical/archeological resources and other environmentally sensitive areas. If avoidance is not possible, then measures shall be taken to minimize the extent of impacts. Alternate access routes or staging areas shall always be considered. Below is a list of methods that shall be considered where impacts are unavoidable:

- Use existing ROW access where available. Keep to approved routes and roads without deviating from them or making them wider.
- Off-ROW access shall never be assumed and shall be coordinated through National Grid Real Estate before being implemented.
- Where no existing ROW access is present, avoid wetlands and if a wetland crossing is necessary, cross wetlands at the most narrow point possible or at the location of a previously used crossing (if evident). Figure 1 below illustrates this minimization technique.

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- Avoid and minimize stream crossings.
- Minimize the width of typical access roads through wetlands to a maximum width of 16 feet.
- Conduct work manually (without using motorized equipment) in wetlands, wherever possible.
- Use construction mats in wetlands to minimize soil disturbance and rutting when crossing or working within wetlands. When not using mats for access, standard vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist. Use of a low ground pressure (LGP) vehicle may be a feasible alternative to mats provided that such LGP vehicle use has been reviewed and approved by the National Grid Environmental Scientist. See Section 7.0.
- Coordinate the timing of work to cause the least impacts during the regulatory low-flow period under normal conditions, when water/ground is frozen, after the spring songbird nesting season, and, outside of the anticipated amphibian migration window (mid-February to mid-June). Refer to the United States Army Corps of Engineers (USACE) state-specific General Permit for the definition of the low-flow period in each state at: <http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>. A summary table is provided in Section 7.0.
- Seek alternative routes or work methods to minimize impact.

**National Grid
Environmental Guidance**

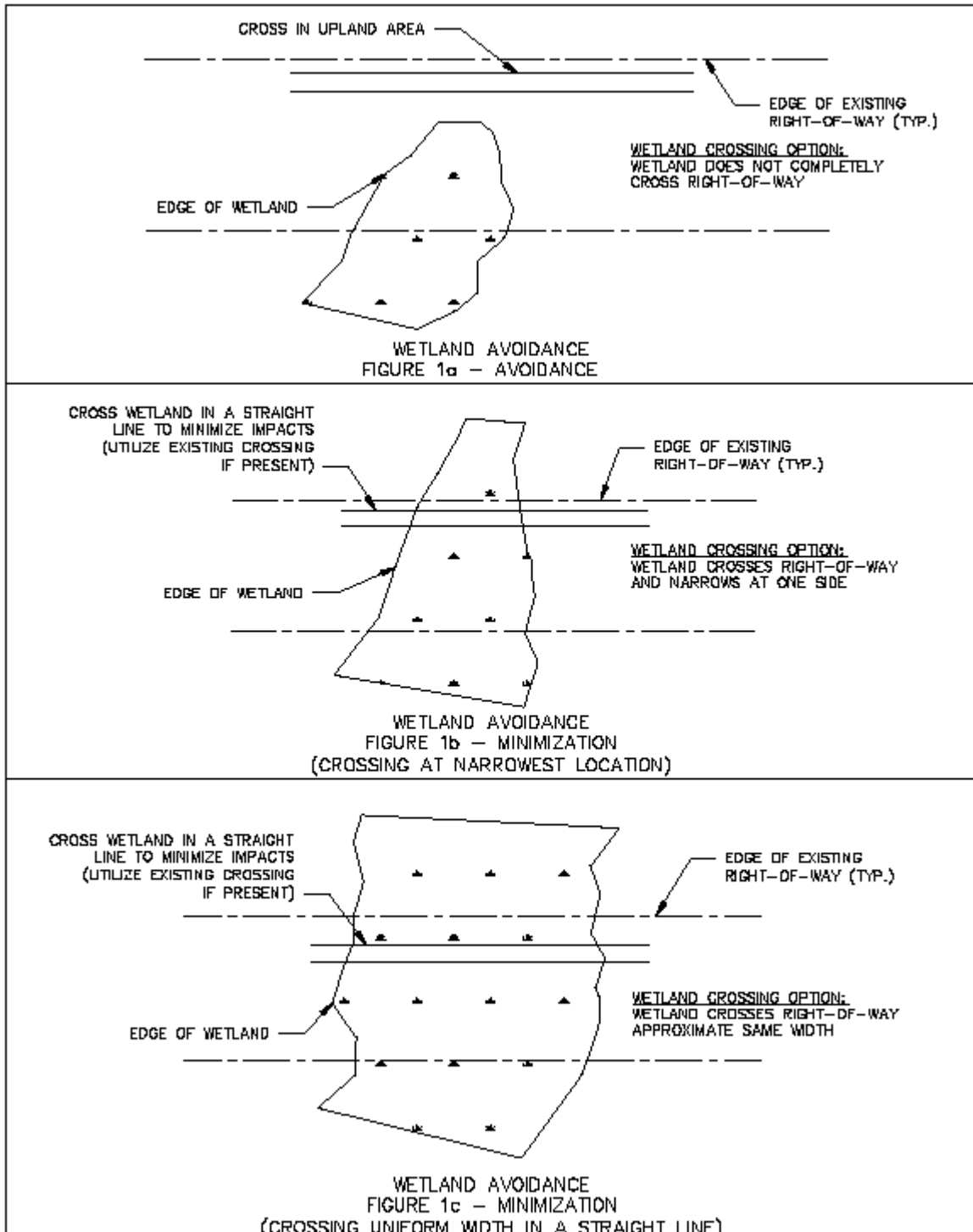
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1.2 Historically Significant Areas

Areas that have been identified as historically and/or culturally significant shall be avoided in accordance with site-specific avoidance plans, as applicable. Refer to the project-specific Environmental Field Issue (EFI) for any applicable avoidance plans or consult with the National Grid Environmental Scientist. Demarcation of these areas to be avoided shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

1.3 Rare Species Habitat

Work within areas that have been identified as mapped rare species habitat shall follow site-specific requirements, as applicable. In Massachusetts, maintenance activities within mapped habitat (known as Priority Habitat of Rare Species) shall follow the BMPs outlined in the Natural Heritage Endangered Species Program (NHESP)-approved National Grid Operation and Maintenance Plan. Work in mapped rare species habitat may require, at a minimum, turtle training for crews and sweeps of work areas for turtles, botanist identification of rare plant locations and avoidance of these locations, and protection of vernal pools, all prior to the start of work. Demarcation of these areas to be avoided (e.g., rare plant populations, overwintering turtles, nests) shall use staked orange snow fencing or an equivalent physical barrier (not just ribbon flagging) and signage. Refer to Section 14.0 for signage guidance.

Where new substations are being constructed or existing substations are undergoing a rebuild or expansion, and the substations are located in mapped rare turtle habitat, project team members should consider fenceline improvements or measures needed to prevent/eliminate turtle entrance into the substation or allow multiple points for easy egress such that turtles are not trapped within the substation fenceline.

Other requirements may apply in NH, VT and RI. Refer to the project-specific EFI for any applicable measures or consult with the National Grid Environmental Scientist.

1.4 Meetings


Pre-permitting meetings shall take place early in the project development process to determine what permits are triggered by the proposed work and the timeline required for permitting. During these meetings, the team shall develop access plans and BMPs to be used during construction of the project.

Field / Constructability review meetings shall take place on-site to evaluate construction site access and job site set-up, to ensure that the project can proceed as permitted. It is at this point in time where work areas, pulling locations, laydown areas, parking areas, and equipment storage areas are evaluated and located. Off-ROW areas under consideration should be included in this discussion.

Prior to submitting permit plans to regulatory authorities, the construction group (contractor or National Grid) shall review the plans for final sign off.

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Pre-construction meetings are typically held prior to the commencement of all work to appoint responsible parties, discuss timing of work, and further consider options to avoid and/or minimize impacts to sensitive areas. These meetings can occur on- or off-site and shall include all the willing and available stakeholders (i.e., utility employees, contractors, consultants, inspectors, and/or monitors, and regulatory personnel). Training of crews and supervisors of the EFI, Stormwater Pollution Prevention Plan (SWPPP), rare species, and other permit requirements shall be conducted at a pre-construction meeting.

Pre-job briefings shall be conducted daily or otherwise routinely scheduled meetings shall be conducted on-site with the work crew throughout the duration of the work. These meetings are a way of keeping everyone up to date, confirming there is consensus on work methods and responsibilities, and ensuring that tasks are being fulfilled with as little impact to the environment as possible.

The Project Environmental Scientist/Monitor and Construction Project Manager shall communicate regularly (e.g. weekly or bi-weekly meetings or phone conversations) to discuss the work completed since last communication (i.e. work locations, wetland impacts, equipment used, and unexpected delays or work conditions). These meetings or calls shall include the expected schedule of construction for the upcoming week, the long term construction plans, and planned methods for working near/in wetlands. Both the Project Environmental Scientist/Monitor and Construction Project Manager shall work together so the Project complies with all environmental permits and regulations. When changes to the Project scope or agreed work plan are proposed they shall be done so with the final approval of the National Grid Environmental Scientist.

1.5 Communication of Project Specific Environmental Requirements


Project specific environmental concerns, to include sensitive resources, permits, approved access and time-of-year or other restrictions, shall be communicated to the project team and be included as part of the Pre-Bid and Pre-Construction Meetings. Project specific requirements shall be communicated to the project manager/construction manager/engineering group using the following guidelines:

Environmental Field Issue – The EFI will be a full document consisting of narrative, project permits, access and matting plans. A table summarizing pertinent (but not all) permit conditions and the responsible party for those conditions shall be included in the EFI. Copies of all permits should be included as attachments. This will be prepared for most projects with multiple permits or large, complex projects (siting board, Section 404, 401 WQC, SWPPP). There shall be EFI training at the pre-construction meeting. The National Grid EFI template is located in **EI-303NE**.

Simplified Environmental Field Issue – The Simplified EFI is a memorandum containing environmental resources present, project permit(s), access and matting plans and a table summarizing relevant permit conditions and responsible party for those conditions. Copies of all permits should be included as attachments. The Simplified EFI will be prepared for most projects with 1 or 2 permits (Order of Conditions, S404 Cat 1). The Simplified EFI should also be provided for projects that have environmental resources present, but the scope of the project does not trigger environmental permitting (e.g., the scope of work qualifies for maintenance exemption(s)). The resources present

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shall be discussed at the Pre-Bid and Pre-Construction meetings and any changes in scope will require additional review by the National Grid project team.

E-mail delivery of Permit and any Sediment/Erosion control or BMP plan – For those projects with only one permit (eg., MA Order of Conditions, RI DEM permit, RI CRMC permit, NH Utility Notification) or projects with a sediment & erosion control plan (local town requirement or for exempt maintenance work), a copy of the permit and any applicable plan will be emailed to the Project Manager (and the project team where deemed necessary) to be incorporated into the Construction Field Issue.

STORMS work management system input – For STORMS work, no EFI is prepared unless multiple permits are required for the project (see guidance above). If only a MA Order of Conditions, MA Determination of Applicability, RI DEM permit, RI CRMC permit, RI SESC Approval, or NH Utility Notification is required, then the permit is attached in the Documents tab and conditions noted in Remarks/Comments section. Standard STORMS boilerplate language is located in **EI-303NE**.

1.6 Timing of Work

Regulatory authorities may place seasonal or time-of-year restrictions on project construction elements. These time-of-year restrictions may be state or permit-specific, and shall be adhered to.

Work during frozen conditions. Activities conducted once wetland areas are frozen sufficient to minimize rutting and other impacts to the surrounding environment may be authorized by the National Grid Environmental Scientist. Work during this time also generally reduces disturbance of aquatic and terrestrial wildlife movement by avoiding sensitive breeding and nesting seasons. When not using mats for access, vehicles shall not be allowed to drive across wetlands without the prior approval of the National Grid Environmental Scientist.

Work during the regulatory low-flow period. Conducting work during the low-flow period can reduce impacts to surface water and generally avoids spawning and breeding seasons of aquatic organisms. If the water is above normal seasonal levels, adjustments to work activities and methods are required.

1.7 Alternate Access

1.7.1 Manual Access


In some cases such as for smaller projects, work areas can be accessed manually. This includes access on foot through upland and shallow wetland areas, access by boat through open water or ponded areas, and climbing of structures where possible. Smaller projects, such as repair of individual structures, or parts of structures, that do not categorically require the use of heavy machinery, shall be accessed manually to the greatest extent practicable.

1.7.2 Use of Overhead/Aerial Access

Using helicopters can be expensive and is not always feasible, but it may be appropriate in some situations in order to get workers and equipment to a site that otherwise may be very difficult to access. The use of overhead and/or aerial equipment may be beneficial for work in areas where larger water bodies, deep crevices, or mountainous areas hinder ground access. The landing area for

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helicopters shall be reviewed for environmentally sensitive resources. Use of helicopters requires Project Manager and Senior Management approval.

2.0 Inspection, Monitoring and Maintenance

All construction practices and controls shall be inspected on a regular basis and in accordance with all applicable permits and local, state, and federal regulations to avoid and correct ANY damage to sensitive areas.

The construction crews shall be responsible for completing daily inspections, and IMMEDIATELY bring any **damage or observed erosion, or failed erosion controls** to the attention of the Person-In-Charge and the National Grid Environmental Scientist. Where applicable and/or as directed by environmental permits issued for the project, the Project Environmental Consultant shall conduct weekly (at a minimum) inspections of the project work areas and shall document their inspection using the Stormwater, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report form found in **Appendix 3** and issue the report within 24 hours. The Person-in-Charge shall work with the National Grid Environmental Scientist and the Project Environmental Consultant to determine when and how the repairs shall be made.

Project-specific Action Logs and Long-Term Restoration Logs are prepared as needed by the National Grid Environmental Scientist or the Project Environmental Consultant to track issues and/or repairs and assign responsible parties.

3.0 Best Management Practices

The BMP sections presented in this EG address access, construction, snow and ice management, structures in wetlands, access road maintenance and repair, clean-up and restoration standards, ROW gates, field refueling and maintenance operations, management of spills/releases, and a summary of key construction BMPs.

Note that BMPs shown on any permit drawings for a specific project may need to be revised and or supplemented during the execution of a project based on unforeseen or unexpected factors such as extreme weather or unknown subsurface conditions. It is the responsibility of the Contractor to work with the National Grid Environmental Scientist and/or the Project Environmental Consultant to identify necessary changes and to ensure that construction-related impacts to wetlands, water bodies and other environmentally sensitive areas are avoided.


Any deviation from the approved BMPs shown in the EFI and/or SWPPP plans shall be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or could result in a permit violation.

3.1 Wetland Boundary Demarcation

Prior to the start of any activity conducted under an environmental permit, wetland boundaries shall be reviewed. Flagging for wetland boundaries, stream banks and other resource areas shall be

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refreshed as needed. This may become particularly important when the original flagging was placed in previous seasons and now may have become obscured.

3.2 Sedimentation and Erosion Controls

Appropriate sedimentation and erosion control devices shall be installed at work sites, in accordance with permit conditions and/or regulatory approvals, and as needed to prevent adverse impacts to water resources and adjacent properties.

The overall purpose of such controls is to prevent and control the movement of disturbed soil and sediment from work sites to adjacent, undisturbed areas, and particularly to water resources, public roads and adjacent properties. All proprietary controls shall be installed per manufacturer's recommendations and specifications.

Appropriate sedimentation and erosion control devices include but are not limited to: silt fencing, straw bales, wood chip bags, straw wattles, compost socks, erosion control blankets, mulch, slope interruption practices, flocculent powder/blocks and storm drain/catch basin inlet protection. Such controls shall be installed between the work area and environmentally sensitive areas such as wetlands, streams, drainage courses, roads and adjacent property when work activities shall disturb soils and result in a potential for causing sedimentation and erosion.

In Massachusetts, use of monofilament-encased wattles shall be avoided in mapped Priority Habitat for snakes and amphibians. For projects with work within mapped Priority Habitat for snakes and amphibians, wattles that are encased in a sock, hemp, fiber, or movable jute netting are required to prevent entrapment. Also, "wildlife gaps" should occur every 50 feet, if possible, given wetland permit conditions. This spacing of the wattles allows snakes and amphibians to move across the ROW. Refer to the Amphibian and Reptile BMPs in **Appendix 4**.

Staked straw bales often serve as the demarcation of the limits of work and/or sensitive areas to be avoided. Work shall never be conducted outside the limit of erosion controls without prior approval from the National Grid Environmental Scientist.


Project plans depict proposed erosion controls, however field conditions may warrant additional practices be implemented (e.g., wet conditions, frozen conditions, poorly drained soils, steep slopes, materials used for work pads, transition areas to construction mats, number of trips across work areas, etc.).

Any deviation from the approved erosion controls shown in the EFI and/or SWPPP plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting or result in a permit violation.

Appendix 4 provides typical sketches of common sedimentation and erosion controls. If a SWPPP is required for the project, maintenance and inspection of erosion controls shall follow the SWPPP requirements. Sedimentation and erosion controls shall be properly maintained and inspected on a

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periodic basis, until work sites are properly stabilized and restored. Inspections shall be documented using the Inspection Form “Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection/Monitoring Report” (**Appendix 3**).

The sequence and timing of the installation of sedimentation and erosion control measures is critical to their success. Sedimentation and erosion controls shall be installed prior to commencing construction activities that may result in any soil disturbance or cause otherwise polluted site runoff. Inspection of these devices may be required by the National Grid Environmental Scientist or by regulators prior to the start of work. The installation of water bars and other erosion control measures shall be installed shortly thereafter.

3.3 Concrete Wash Outs

Concrete wash outs shall be used for management of concrete waste. Concrete and concrete washout water shall not be deposited or discharged directly on the ground, in wetlands or waterbodies, or in catch basins or other drainage structures. Where possible, concrete washouts shall be located away from wetlands or other sensitive areas. Consult the National Grid Environmental Scientist on proposed concrete wash out locations prior to their use. Following the completion of concrete pouring operations, the wash outs shall be disposed of off-site with other construction debris. Refer to BMPs in **Appendix 4**.

3.4 Construction Activities in Standing Water

The use of silt curtains or turbidity barriers may be required when working in or adjacent to standing water such as ponds, reservoirs, low flowing rivers/streams, or coastal areas. Silt curtains and turbidity barriers prevent sediment from migrating beyond the immediate work area into the resource areas.

Coffer dams constructed using sheet piling or large sandbags (Trade names such as “the Big Bag” or “DamItDams”) may be used to temporarily isolate and contain a work area in standing water.

When working in standing water, an oil absorbent boom, in addition to a silt curtain or other temporary barrier, shall be placed around the work area for spill prevention.


Work in drinking water reservoirs or other waters may require extensive regulatory agency review, even for maintenance work, which could result in additional time required for permitting, review and material procurement prior to the start of work.

3.5 Dewatering

Where excavations require the need for dewatering of groundwater or accumulated stormwater, the water shall be treated before discharge. Appropriate controls include dewatering basins, flocculent blocks, filter bags, filter socks, or weir tanks. Schematics of these BMPs are included in **Appendix 4**. Water trucks or fractionation tanks may be utilized if watertight containers are desired for controlled on-site discharge or for off-site discharge into an approved dewatering area when site restrictions make it difficult to utilize other dewatering methods on-site. Dewatering discharge water shall never be directed into wetlands, streams/rivers, other sensitive resource areas, catch basins, other

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stormwater devices, or substation Trenwa trenches. Dewatering flow shall be controlled so that it does not cause scouring or erosion through the use of a dewatering basin, filter sock, or equivalent. If it is determined that the chosen controls are not appropriately filtering the fine sediment from the dewatering pumpate then the National Grid Environmental Scientist shall be notified immediately and the controls shall be revised or supplemented.

When establishing a dewatering basin, consideration should be given to the anticipated volume of water and rate of pumping in determining the size of the dewatering basin. Dewatering basins shall be constructed on level ground. Once pumping commences, the basin shall be monitored frequently to assure that the rate of water delivery to the structure is low enough to prevent water from flowing, unfiltered, over the top of the basin walls. The basin shall be monitored throughout the dewatering process because the rate of filtration shall decrease as sediment clogs the filter fabric. If the basin is not appropriately filtering the fine sediment from the dewatering pumpate then the basin may need to be supplemented with a flocculent block. Field conditions shall dictate how often the basin should be inspected.

Distance to sensitive areas, direction of flow (toward or away from protected, or sensitive areas, such as wetlands, ponds, or streams), amount of vegetative ground cover between the basin and nearby sensitive areas, ground conditions (ledge, frozen, etc.), volume of water being pumped, and pump-rate, are some of the factors to be considered when determining an inspection frequency. Clogged filter fabric shall be replaced and accumulated sediment shall be removed as necessary from the basins to maintain efficacy.

Any new dewatering location (not previously reviewed and approved by the National Grid Environmental Scientist during project planning or permitting) shall be reviewed and the discharge location approved by the National Grid Environmental Scientist before use.

Complex projects that require large scale dewatering shall require individual review by the National Grid Environmental Scientist and may trigger additional permitting.

Dewatering in areas of known chemical contamination may require a separate NPDES permit, or other approval, and treatment or containment system. Consult with the National Grid Environmental Scientist.


3.5.1 Overnight Dewatering

Some projects may necessitate 24-hour dewatering for on-site construction activities. Overnight dewatering will be evaluated on a case-by-case basis by the National Grid Environmental Department.

If it is necessary to conduct overnight dewatering on a project, a dewatering plan must be submitted to the Environmental Department for review and approval **5 business days prior to beginning dewatering activities**. Sufficient knowledge of flow, discharge, and re-infiltration rate of water must be obtained and submitted for review. The Environmental Department

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may require monitored dewatering for a period of time in order to provide this data in support of a request for 24-hour dewatering. The dewatering plan must include at a minimum:

1. Location of dewatering system, system components (basin, frac tank, etc), and materials.
2. Location of discharge and distance from closest wetland.
3. Location of erosion controls. A secondary perimeter of erosion controls will be required around the dewatering system for overnight dewatering.
4. Peak flow, discharge rate and re-infiltration rates.
5. Visual monitoring plan for discharge. Expected duration of dewatering.
6. Emergency provisions if overnight, unattended dewatering is proposed.

3.5.2 Dewatering Clean Up/Restoration

Basins shall be cleaned and removed as soon as dewatering is complete. Sediment removed from the dewatering basin shall be allowed to dry before being disposed of by evenly spreading it over unvegetated upland areas where erosion is not a concern if clean or removing it from the site for proper disposal. Off-site trucking of wet soils is prohibited. The sediment disposal area shall be approved by the National Grid Environmental Scientist or the Project Environmental Consultant prior to use. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Soils/sediments shall be dewatered and dried to the point practicable for either on-Site reuse or off-Site transport.

3.6 Check Dams

Check dams are a porous physical barrier installed perpendicular to concentrated storm water flow. They are used to reduce erosion in a swale by reducing runoff energy (velocity), while filtering storm water, thereby aiding in the removal of suspended solids.


Check dams should only be used in small drainage swales that shall not be overtopped by flow once the dams are constructed. These dams should not be placed in streams. Check dams are typically installed in ROWs or on other construction sites prior to the start of soil disturbing work. Per the Rhode Island Soil Erosion and Sediment Control Handbook, no formal design is required for a check dam if the contributing drainage area is 2 acres or less and its intended use is shorter than 6 months; however, the following criteria should be adhered to when specifying check dams.

- The drainage area of the ditch or swale being protected should not exceed 10 acres.
- The maximum height of the check dam should be 2 feet.
- The center of the check dam must be at least 6 inches lower than the outer edges.
- The maximum spacing between the dams should be such that the toe at the upstream dam is at the same elevation as the top of the downstream dam.

Per the NHDES stormwater manual, the use of check dams should be limited to swales with longitudinal slopes that range between 2 to 5 percent that convey drainage from an area less than 1 acre. Existing conditions that exceed these limitations should be assessed in the field and discussed

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with the National Grid Environmental Scientist to determine the viability of this BMP for the specific application. Check dams are often comprised of stone, straw bales, sand bags, or compost/silt socks. Use of check dams should be coordinated with the National Grid Environmental Scientist to ensure that the material selection, spacing and construction method are appropriate for the site. Check dams composed of biodegradable materials (e.g. straw bales or wattles, wood chip bags) may require periodic replacement for continued proper functioning¹. Refer to BMPs in **Appendix 4**.

3.7 Water Bars

Water bars should be used on sloping ROWs to divert storm water runoff from unstabilized or active access roads when needed to prevent erosion. Surface disturbance and tire compaction promote gully formation by increasing the concentration and velocity of runoff. Water bars are constructed by forming a ridge or ridge and channel diagonally across the sloping ROW. Each outlet should be stable. The height and side slopes of the ridge and channel are designed to divert water and to allow vehicles to cross. When siting water bars, consideration shall be given to the sensitivity of the area receiving the diverted runoff. For example, runoff should not be directed into a wetland, waterbody, other environmentally sensitive areas, or to private property or public roadways. Refer to BMPs in **Appendix 4**.


3.8 Retaining Walls

In some situations, retaining walls comprised of concrete blocks, gabions, boulders or other comparable materials may be required to stabilize the shoulder of existing access roads and/or supplement required erosion controls. Installation of such measures shall not be allowed as a maintenance activity. Should these controls be considered for a project, it shall be reviewed by the National Grid Environmental Scientist, as design and additional permitting may be required.

3.9 Slope Stabilization

Temporary slope stabilization practices help to keep exposed, erodible soils stabilized while vegetation is becoming established. Acceptable temporary slope stabilization practices may include the use of erosion control blankets, or hydraulic erosion control. Erosion control blankets, often comprised of natural fibers (e.g., jute, straw, coconut, or other degradable materials) are a useful slope stabilization, erosion control and vegetation establishment practice for ditches or steep slopes. Blankets are typically installed after final grading and seeding for temporary or permanent seeding applications. Hydraulic erosion control practices, including Bonded Fiber Matrix or hydroseed with a soil stabilizer (e.g., tackifier and/or mulch) may be an acceptable or desirable alternative form of temporary slope stabilization. For all practices, manufacturer's specifications should be followed for installation depending on slope and other field conditions. Consult the National Grid Environmental Scientist prior to selecting and installing any slope stabilization practices. Refer to BMPs in **Appendix 4**.

¹ Grass growth on a biodegradable type check dam is evidence that the material is decomposing. While this doesn't mean it is no longer functioning, it means it may be in a weakened condition and could potentially fail under high flow velocity. It is acceptable for grass to be growing on a stone check dam.

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3.10 Maintenance of Sedimentation and Erosion Controls

Sedimentation and erosion controls shall be maintained in good operational condition during the course of the work. This includes, but is not limited to, replacing straw bales that are no longer in good condition, re-staking straw bales, replacing or re-staking silt fence, and removing accumulated sediment. Remove sediment before it has accumulated to one half the height of any exposed silt fence fabric, straw bales, other filter berm, check dams or water bars. Accumulated sediment shall be removed from sedimentation basins to maintain their efficacy. Manage the removed sediment by evenly spreading it over unvegetated upland areas where erosion is not a concern, by stockpiling and stabilizing, or by disposing of off-site. Stabilization measures shall also need to be implemented and approved by the National Grid Environmental Scientist or the Project Environmental Consultant. Where a SWPPP has been prepared for a specific site, the guidelines documented therein shall govern the management of sediment.

4.0 Right-of-Way (ROW) Access

Whenever possible, access shall be gained along existing access routes or roads within the ROW. However, in some cases there is no existing access. In many cases, temporary access can be utilized. The following practices provide general guidance on accessing a ROW. Check with a National Grid Environmental Scientist to determine if any environmental permitting is required before utilizing a temporary access.

Note that the building of new roads or enlargement of existing roads is **prohibited** unless this activity is allowed by a project-specific permit, and the new roads appear on the Site Plans that were authorized in the regulatory approvals.


4.1 Off-ROW Access

Off-ROW access shall be evaluated for wetlands, rare species, cultural resources and other potential sensitive receptors, as applicable. National Grid Real Estate and Stakeholder Relations shall also be contacted as soon as possible once off-ROW access is determined to be needed.

4.2 Stabilized Construction Entrance/Exit for Access to ROWs from Public or Private Roads

A suitable (minimum 15-foot wide by 50-foot long) construction entrance/exit shall be installed at the intersection of the ROW access road/route with public/private paved roads, or other such locations where equipment could track mud or soil onto paved roads. The construction entrance/exit should be comprised of clean stone installed over a geotextile fabric. Geotextile fabric may be omitted for permanent construction entrances/exits on a case-by-case basis with the approval of the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

Construction entrance areas shall be monitored and maintained to ensure that stone or other material is not deposited onto the roadway, causing a safety concern. Where track-out of sediment has occurred onto a roadway, it shall be swept off the road by the end of that same work day.

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If a construction entrance/exit is clogged with sediment and no longer functions, the sediment and stone may require removal and replacement with additional clean stone (clean stone refreshment) to ensure this tracking pad is performing its intended function adequately. Heavier traffic use may require this clean stone refreshment multiple times throughout a project. Reinforcement of these stabilized construction entrance/exits with asphalt binder or asphalt millings is not likely to be considered “maintenance” and may trigger additional permitting requirements². In some cases, heavily used construction entrances/exits may benefit from the installation of a 5-15 foot strip of asphalt binder or asphalt millings closest to the paved roadway to capture any stone that is tracked from the stone apron. Such cases shall be evaluated on an individual basis with the National Grid Environmental Scientist.

Once work is complete, the construction entrance/exit shall either be removed or retained, depending upon future maintenance-related access needs, property ownership, and/or project-specific approvals. If removed, the area shall be graded, seeded (if adequate root and seed stock are absent) and mulched. Proper approvals for leaving access roads in place shall be obtained; contact the National Grid Environmental Scientist and Property Legal.


4.3 Maintenance of Existing Access Roads

In many cases, the existing access road may need to be maintained to allow passage of the heavy equipment required for scheduled maintenance work. Access roads cannot deviate from the approved and permitted access plans. Maintenance of these roads may include adding clean gravel or clean crushed stone to fill depressions and eroded areas. This activity shall be conducted only within the width of the existing access road footprint and does not include widening existing access roads

If gravel begins to migrate onto the existing vegetated road shoulder, this gravel shall be removed during the project and/or after the completion of use of the road to ensure the road fill is not spreading into adjacent resource areas, or resulting in the road becoming much wider than its pre-existing or permitted condition. In some areas of mapped rare species habitat or other sensitive areas where project-specific permit conditions require the prevention of the migration of sediments into adjacent resources, an engineered stabilization system (e.g., GeoWeb or similar) may be suitable to prevent sedimentation while allowing for unrestricted wildlife migration.

In Massachusetts, any proposed widening of access roads in turtle Priority Habitat would require individual consultation with NHESP and, depending on the level of impact proposed, may require a Project Review filing. The limited filling of ruts or potholes is compatible with the National Grid Operation and Maintenance Plan approved by NHESP under the Massachusetts Endangered Species Act, however, severely rutted access roads in turtle Priority Habitat that require extensive linear feet of stone for safe passage will require individual consultation with NHESP.

² Depending on the road, use of an asphalt binder or asphalt millings as a construction entrance/exit may trigger state or local permit requirements.

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Major reconstruction projects may require multiple permits. In all cases, the fill to be used for existing access roads shall be clean and free of construction debris, trash or woody debris. Use of processed gravel may be approved by the Person-In-Charge and the National Grid Environmental Scientist, on a case-by-case basis. If clean stone is used then addition of more erosion controls may not be necessary.

4.5 Maintenance of Existing Culverts

Damaged culverts may not be repaired or replaced without consulting with the National Grid Environmental Scientist to determine if a permit is required. For functioning culverts, care shall be taken to protect adjacent wetlands and watercourses by installing appropriate sedimentation and erosion controls around the downstream end of the culvert. Culverts shall be repaired/replaced in kind and shall not be changed in size unless approval has been obtained from the National Grid Environmental Scientist. In-kind replacement is replacement using the same material, functional inverts, diameter and length as the existing culvert. Changes to any of these characteristics shall require permitting. Installation of any **new** culvert is not allowed without obtaining all necessary permits first. Refer to BMPs in **Appendix 4**.

If, at the time of anticipated replacement, there is heavy flow through the culvert, the Person-In-Charge shall consult with the National Grid Environmental Scientist, to verify whether the culvert shall be replaced at that time. Water may need to be temporarily diverted during culvert repair/replacement. There typically are seasonal restrictions limiting both the replacement of existing culverts as well as installation of new culverts to the low-flow period. The low-flow period can vary from state to state. If any unexpected conditions are encountered during culvert replacement, the National Grid Environmental Scientist shall be contacted immediately prior to the work being completed for additional consultation.

4.6 Temporary Construction Access over Drainage Ditch or Swale


In some situations, construction access from paved roads onto ROWs may require the crossing of drainage ditches or swales along the road shoulder. In these situations, the installation of construction mats, mat bridges or temporary culverts may facilitate construction access over the ditches or swales. These culverts shall be temporary only, sized for peak flow, and shall be removed after construction is complete. Consult with the National Grid Environmental Scientist prior to installation. In addition, if access over existing culverts may require extending the culvert, consult with the National Grid Environmental Scientist. Refer to BMPs in **Appendix 4**.

4.7 Construction Material along ROW

After preparing a site by clearing and/or installing any necessary erosion and sediment controls and prior to the start of construction, material such as poles, cross-arms, cable, insulators, stone and other engineered backfill materials may be placed along the ROW, as part of the project. The stockpiling of stone and other unconsolidated material on construction mats shall be avoided, if determined necessary due to access and work pad constraints, the material must be placed on a geotextile fabric and be properly contained with a sedimentation barrier such as straw wattle. No construction material shall be placed in wetlands or other sensitive resource areas unless authorized by the National Grid Environmental Scientist or Project Environmental Consultant.

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5.0 Winter Conditions

5.1 Snow Management

Refer to **Appendix 6** for the current Snow Disposal Guidelines.

5.2 De-Icing

Where allowed, calcium chloride is preferred as a de-icing agent when applied according to manufacturer's guidelines in upland areas. Sand shall be used on construction mats through wetland areas.

Consult with the National Grid Environmental Scientist on de-icing agents when working in a facility or substation close to resource areas. Many municipalities have specific requirements for de-icing agents allowed within 100 feet of wetland resources and other sensitive areas.

5.3 Snow and Ice Management on Construction Mats


Proper snow removal on construction mats shall avoid the formation of ice. To avoid the formation of ice, snow shall be removed from construction mats before applying sand. Prior to their removal from wetlands, sand shall be collected from the construction mats and disposed of in an upland area. A round street sweeping brush mounted on the front of a truck may be an effective way to remove snow from construction mats. Propane heaters may also be suitable solutions for snow removal and/or de-icing of construction mats.

Once construction mats are removed, wetlands shall be inspected for build up of sand that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure sand is properly removed and disposed of off-site.

6.0 Construction Mats

The use of construction mats allows for heavy equipment access within wetland areas. The use of construction mats minimizes the need to remove vegetation beneath the access way and helps to reduce the degree of soil disturbance and rutting in soft wetland soils. Construction mats most often used by National Grid are wooden timbers bolted together typically into 4-ft by 16-ft sections, wooden lattice mats, or composite mats. In some cases, construction mats or other mats are used for staging or access in upland areas based on site conditions (e.g., agricultural field access). Refer to BMPs in **Appendix 4**.

Typically construction mats may be installed on top of the existing vegetation, however in some instances cutting large woody vegetation may be required. Check with National Grid Environmental Scientist prior to cutting or clearing vegetation for construction mat placement.

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Where an extended period of time has lapsed since wetland delineation and start of construction, and new vegetative growth has concealed wetland flagging or flagging is simply no longer obviously visible, wetland boundaries should be re-flagged where necessary prior to the installation of matting.

Follow the approved plans in the EFI for construction mat installation and do not deviate from the plans. **Any deviation from the approved plans needs to be communicated immediately to the National Grid Environmental Scientist as it may require additional permitting, require stopping the project or result in a permit violation or revocation.**

6.1 Construction Mats and Mowing

Close coordination with the mowing contractor shall be required to ensure that access plans are followed, and construction mats are utilized when necessary. Sometimes mowing contractors may have to work off the leading edge of a construction mat to mow in order to lay the next construction mat and continue further into the wetland. Under no circumstances shall trees or shrubs be allowed to be pulled out of the wetland by the root ball. The root ball of trees and shrubs shall remain intact. Chipping debris and excessive amounts of slash shall not be placed in wetlands or other resource areas. In some instances, it may be beneficial to pile a reasonable amount of slash within a nearby upland area to create habitat for wildlife. This activity shall be approved by the National Grid Environmental Scientist.


6.2 Stream Crossings and Stream Bank Stabilization

Stream crossings shall be bridged with construction mats or other temporary minimally-intrusive measures unless fording is acceptable for the site and is authorized by the National Grid Environmental Scientist. Care shall be taken when installing a construction mat bridge to insure that the stream bed and banks are not damaged during installation and removal and that stream flow is not unduly restricted. Where stream width allows, construction mats shall be installed to span the watercourse in its entirety without stringer placement in the water or any restriction of stream flow. Environmental permits may be required to cross or disturb protected waters, depending upon state-specific regulatory requirements. Refer to BMPs in **Appendix 4**. Immediately following construction mat removal, all stream banks shall be stabilized and restored to prevent sedimentation and erosion.

6.3 Cleaning of Construction Mats

Mats shall be certified clean by the vendor prior to installation. The vendor shall use the certification form provided as **Appendix 5** to document compliance. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment or timber mats that have been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another³. **Mats shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement**

³ On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental scientist for guidance.

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may be made on a case-by-case basis. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of construction mats.

6.4 Stone Removal for Construction Mat Placement

For situations where the matting contractor determines that stones or boulders must be removed or relocated within wetland areas in order to install safe and level structure work pads or access roads the boulders shall be moved in a manner which does not result in significant soil disturbance (i.e., pushing with a bull dozer is not allowed). The boulders shall not be placed on any existing vegetated areas within wetlands or within vernal pools. When numerous boulders shall be removed from a wetland area, they shall be deposited in an upland area outside of the flagged wetland limits, outside of any cultural resource areas and outside of any RTE species populations. Any boulders that shall be placed within buffers (In MA, the 100-foot buffer zone, and in RI, the 50-foot Perimeter Wetland, 100-foot or 200-foot Riverbank Wetlands) shall be placed to avoid causing soil disturbance and they shall be within an approved limit of work. When there is a significant number of boulders that need to be removed, the National Grid Environmental Scientist shall be consulted for guidance.

6.5 Transition onto Mats

Erosion controls and stone or wood chip ramps shall be installed to promote a smooth transition to and minimize sediment tracking onto construction mats. Geotextile may be added beneath stone or wood chip transitions to facilitate removal, as necessitated by site or permit conditions. Mat transitions shall be removed once construction mats have been removed and during restoration. Refer to BMPs in **Appendix 4**.

6.6 Construction Material on Mats


The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport. Heavy machinery shall not be left overnight on mats located within floodplain unless approved by the National Grid Environmental Scientist, the machinery is still in use, and removal of the equipment requires the use of additional equipment to move it and would increase vehicle trips in/out of wetlands. In these situations and when approved by the National Grid Environmental Scientist, the equipment shall be secured against vandalism and secondary containment measures shall be employed where feasible. Mat anchoring shall be evaluated, see below.

6.7 Mat Anchoring

The National Grid Environmental Scientist and Project environmental consultant shall indicate to the project team when mat anchoring may or shall be necessary. The matting contractor will propose the method of mat anchoring, which will be approved by the National Grid Environmental Scientist and the

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National Grid Construction Supervisor. The need for anchoring should be noted in the project EFI, on the project access and matting plans, and in the scope of the bid document (if externally sourced).

Anchoring of construction mats should be considered when any of the following conditions are presented at a project work location:

Location	Considerations
Stream crossings Shorelines of Ponds/Lakes Wetlands Floodplains	When located in a mapped flood area (A). When mapped 100-year flood elevations (AE) are greater than 2 ft above existing grades. Where past flash flood events have occurred. Where steep terrain is present or surrounds the project location. When mats will be in place during hurricane season for greater than 2 weeks.
Tidal areas	When located in a Velocity (V or VE) Zone. When mats will be in place during a moon tide cycle. When mats will be in place during hurricane season for greater than 2 weeks.

Examples of mat anchoring are provided below, but the implementation methods for anchoring mats are not limited to these examples. Where anchoring is determined to be necessary, the matting contractor should propose a method suitable based on field conditions and that takes crew safety, slip/trip/fall hazards, size of matting footprint, and other project and site-specific factors into consideration. Refer to BMPs in **Appendix 4**.

Limited sets of mats

- Cable or rope in chain pockets and run linearly, or
- Linear ropes anchored using helical screws, manta ray anchors, or posts.

Larger sets of mats or those without chain pockets


- Chain link fence posts or other posts driven in along mat edge every 3-4 feet and ropes then laced across mats between opposing posts before storm event, or
- Anchor bolts added to mats, then cable is laced between bolts and tied to helical or manta ray anchor.

6.8 Corduroy Roads

Corduroy roads are a wetland crossing method where logs are cut from the immediate area and used as a road bed to prevent rutting from equipment crossing. This technique is designed to be used in areas of wetland crossings where there is no defined channel or stream flow and should never be used in streams. Corduroy logs shall be placed in the narrowest area practicable for crossing with the logs

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placed perpendicular to the direction of travel across wet area. The use of corduroy logs shall only be in emergencies when approved by the National Grid Environmental Scientist or when they have been specifically permitted as part of a project. Refer to BMPs in **Appendix 4**.

6.9 Construction Mat Removal

Once construction mats are removed, wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings as each mat is removed to ensure any materials are properly removed and disposed of off-site.

6.10 Utility Air Bridging

In ROWs where other utility facilities (including but not limited to gas, oil, fiber optic, electric, water, and sewer) are co-located within the transmission ROW, bridging may be required to cross those facilities. The project team shall coordinate with the respective utility company prior to determining if bridging or permanent crossings are required.


7.0 LGP Equipment Use

Only when approved by the National Grid Environmental Scientist on a case-by-case basis shall equipment with a LGP **psi that meets the state-specific USACE General Permit requirement when loaded** be allowed to access through wetlands. Refer to the state-specific General Permit for the definition of LGP in each state at: <http://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>, or to the summary table provided below. The National Grid Environmental Scientist's approval of the use of LGP equipment through wetlands depends on several criteria including:

- Time of year. LGP equipment use may be allowed if weather and field conditions at the time of construction are suitable to eliminate/minimize the concern of rutting or other impacts. Frozen, frozen snow pack, low flow, drought conditions, or unsaturated surface soil conditions are typically acceptable conditions. Spring and fall construction, due to the typical higher precipitation, are not suitable times of year for LGP equipment use.
- Number of trips. Multiple trips through a wetland have shown to increase the potential for damage and require matting. LGP equipment use shall likely only be approved if trips are limited to one trip in and one trip out.
- Type of wetland system. Some wetlands have harder soils/substrate, and may be passable without causing significant damage. Some of the wetlands along National Grid ROWs have existing hard bottom roads that have been vegetated over time and may be traversed with LGP equipment without construction mats.
- Emergencies. LGP equipment use may be allowed during emergency or storm conditions for outage restoration.
- State-specific USACE General Permit Performance Standards. The standard is for no impact to the wetland, which may be obtained by using LGP equipment **when loaded**). *"Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground*

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pressure (as specified in the USACE GP), or shall not be located directly on wetland soils and vegetation; it shall be placed on construction mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation.”

- Local bylaws. Municipal wetland bylaws, where applicable, shall be reviewed for prohibitive conditions or applicable performance standards.

LGP equipment is prohibited in the following resources areas:

- Stream crossings
- State listed-species habitat
- Outstanding Resource Waters (ORWs)
- Vernal pools
- Archaeological sensitive areas

Where LGP equipment use is desired in lieu of construction mats, the construction supervisor should identify these areas on marked-up access plans. A site visit with the Project Environmental Monitor should be scheduled to assess if the proposed locations are potential candidates. The Project Environmental Monitor will document potentially suitable locations and dismiss others as unsuitable.


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ACOE New England District General Permit Requirements

State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
MA	<i>One of the following must apply:</i> Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Equipment must be operated on adequately dry or frozen conditions such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands.	3 psi	MA General Permit, General Condition 13
NH	<i>One of the following must apply:</i> Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands.	4 psi	NH General Permit, General Condition 17
VT	<i>One of the following must apply:</i> Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands. Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.	3 psi	Vermont General Permit, General Condition 14
RI	<i>One of the following must apply:</i> Equipment operated within wetlands shall: a) Have low ground pressure; b) Be placed on timber mats that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation; or c) Be operated on frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath equipment and upheaval of adjacent wetlands.	6 psi	Rhode Island General Permit, General Condition 15

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State	Restrictions	Maximum PSI (when loaded) for Use without Mats	Reference
	Note: Written authorization from the Corps required to waive the use of mats during frozen or dry conditions.		

Due to the fact that ground conditions may change between the time of the evaluation and construction, LGP equipment approval is required **at the time of construction for each wetland crossing** and shall be dependent upon the above conditions. In addition, LGP equipment use and approval shall be assessed by the National Grid Environmental Scientist or Project Environmental Monitor during construction on a continuing basis

Once a location is approved for the use of LGP equipment:

- The Construction Supervisor must check-in with the Project Environmental Monitor at least two weeks before construction begins to ensure conditions remain suitable for LGP equipment use, and weather conditions are favorable.
- The Project Environmental Monitor must observe the equipment when in use.
- LGP equipment use shall cease immediately if field conditions are found to be unsuitable (i.e. soil rutting greater than six inches or the destruction of vegetation root systems beyond the capacity of natural revegetation).
- **If wetlands damage occurs, the use of the LGP equipment shall be suspended, and the wetlands be restored.**
- Any LGP equipment used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project site to prevent the spread of invasive species from one area to another.

8.0 Soil Disturbing Activities

8.1 Dust Control


Cutting activities shall be conducted to minimize the impacts of dust on the surrounding areas. Dust suppression is an important consideration. Water or other National Grid approved equivalent in accordance with the manufacturer's guidelines may be used for dust control along ROWs in upland areas. During application of water for dust control, care shall be taken to ensure that water does not create run-off or erosion issues. Refer to BMPs in **Appendix 4**.

8.2 Clearing

Clearing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and may trigger permitting by increasing the project's footprint of disturbance. If clearing is required for a project, the limit of clearing shall be established with flagging or construction

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fencing and/or erosion controls. Clearing shall be done in accordance with project specific permits. Following the completion of clearing, the limits of work shall be re-established. Refer to BMPs in **Appendix 4**.

8.3 Grubbing

Grubbing is not allowed without specific permission as it constitutes soil disturbance under several regulatory programs and likely triggers permitting by increasing the project's footprint of disturbance. If grubbing is required for a project, the limit of grubbing shall be re-established after clearing has been completed. The area of grubbing shall be identified with flagging or construction fencing and/or erosion controls. Grubbing shall be conducted in accordance with project-specific permits.

8.4 Blasting, Noise and Vibration Control

If blasting is anticipated, the project team, including the National Grid Environmental Scientist, shall be consulted. If possible, plan work in residential areas to avoid noisy activities at night, weekends or during evenings. Emergency work in residential areas should be carried out in such a way as to keep noise to a minimum at night and weekends. Equipment should be maintained as per the manufacturer's guidance to minimize noise and vibration.

Work plans must consider local noise ordinances and provide specific controls to ensure noise levels are maintained within specified limitations.

8.5 Site Grading


The work site shall not be graded other than in accordance with project permits. Any proposed grading shall be reviewed by the National Grid Environmental Scientist for wetlands, rare species habitat, areas of cultural and historical significance, and other environmentally sensitive areas prior to start of work. In some cases, additional testing for cultural or historical resources may be triggered by proposed grading; alternatives to grading may be sought due to protracted time frame of obtaining the permit associated with testing and performing the testing. Grading outside of a regulated area shall be kept to the minimum extent necessary for safe and efficient operations and shall comply with the project permit plans.

Grading shall be performed in a manner which does not increase the erosion potential at the Site (e.g., terraces or slope interruptions shall be utilized). Graded sites shall be promptly stabilized by applying a National Grid approved seed mix (if adequate root and seed stock are absent), and mulching with hay, straw or cellulose (use straw or cellulose hydromulch where the potential introduction of invasive plant species is of concern) to reduce erosion and visual impact, as soon as possible following completion of work at the site. Grading within a regulated area shall be subject to the review and approval of the National Grid Environmental Scientist.

In some municipalities, site grading activities require the prior approval of the Town Engineer, Building and Zoning Official, or Public Works Director. Local ordinances or bylaws should be reviewed for applicable restrictions and permitting thresholds

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8.6 Grounding Wells

The installation of grounding wells shall require erosion controls and proper soil management. Due to the typical depth required for grounding wells (typically 50 to 200 feet or more), erosion controls shall be installed around the proposed well location when working in buffer zone, in proximity to sensitive resources or near slopes. Also, dewatering basins may be required for the proper management of groundwater. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.7 Counterpoise and Cathodic Protection

The installation of counterpoise or cathodic protection shall require erosion controls and proper soil management. The National Grid Environmental Scientist shall be consulted for the disposal of any excess soil.

8.8 Work Pads

When work pads are being constructed, only clean material shall be used in their construction. Work pads shall only be constructed in areas approved by the National Grid Environmental Scientist and shown on the approved permit access plans.

8.9 Site Staging and Parking

During the project planning and permitting process, locations shall be identified for designated crew parking areas, material storage, and staging areas. Where possible, these areas should be located outside of buffer zones, watershed protection areas, and other environmentally sensitive areas. Any proposed locations shall be evaluated for all sensitive receptors and for new projects requiring permitting, shall be incorporated onto permitting and access plans.

8.10 Soil Stockpiling

Soil stockpiles shall be located in upland areas and, if in close proximity to wetlands and wetland buffers, shall be enclosed by staked straw bales or another erosion control barrier. The stockpiling of stone, drill spoils and other unconsolidated material on construction mats shall be avoided unless determined necessary due to access and work pad constraints. Additional controls, such as watertight mud boxes and geotextile/filter fabric over or between construction mats shall be considered for stockpile management. If material is placed on construction mats and falls through into wetlands, the material must be removed by hand. Saturated soils shall be allowed to dewater prior to off-site transport for sufficient time to ensure that water/sediment is not deposited onto construction mats or public roads during transport.


8.11 Top Soil/High Organic Content Soil

When the work site requires excavation and grading, the top soil shall be stockpiled separately from the material excavated. This top soil shall be spread as a top dressing over the disturbed area during restoration of the site.

In some instances where work is occurring within wetlands, high organic content soil may be displaced. Such high organic content soil shall be segregated from other excavated materials and stockpiled for

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use in wetland restoration areas. Care shall be taken to minimize the handling of high organic content soil. Preferably, the soil shall be stockpiled in one location until it is moved to the restoration area.


9.0 Stone Wall Dismantling and Re-building

Removal or alteration of stonewalls shall be avoided, whenever possible. As appropriate, some stonewalls removed or breached by construction activities shall be repaired or rebuilt. Rebuilt stone walls shall be placed on the same alignment that existed prior to temporary removal, to the extent that it shall not interfere with operations. The removal and rebuilding of stone walls requires approval from the National Grid Environmental Scientist and Property Legal, and may require several weeks lead time for coordination. Note that not all states allow this technique and that dismantling may not be allowed at all due to quality or significance of the wall. Once a stone wall has been identified as requiring dismantling, the following procedures shall be followed:

- Identify stone wall that is required to be temporarily dismantled and notify project team that a site visit is warranted to review the stone wall.
- The National Grid Environmental Scientist, with support from Property Legal and/or cultural/historical consultant, shall determine if permitting or additional permissions are required prior to dismantling stone wall.
- Once permit or permissions have been received, full documentation of wall dimensions (measurements and photographs) shall be submitted to the National Grid Environmental Scientist. Documentation of the wall dimensions shall be marked onto a copy of the applicable EFI access plan (or equivalent plan) with a useful reference for future locating such as GPS coordinates and/or measurement from a permanent reference point (closest structure location or closest cross street, etc.). The wall shall be photographed from all sides with a written description of the photograph (i.e. southern side of wall looking north). In addition, documentation of the length of wall to be dismantled shall be recorded. Take special care to note if granite property bounds (or other marker) are located within the wall so additional survey can be accomplished prior to dismantling in cases where the stone wall represents a property boundary. Site visits by project team (which shall include the National Grid Environmental Scientist) are a mandatory requirement prior to dismantling.
- No dismantling shall take place until documentation has been submitted to the National Grid Environmental Scientist and approved as sufficient documentation.
- Stones from the wall shall be removed from the work area and temporarily stored in nearby location, away from wetlands; buffer zones; rare species habitat and other historical/archeological concerns.
- Avoid dismantling via the “bulldozer” method when possible as this method makes it nearly impossible to rebuild the wall in the same alignment due to its uncontrolled nature. Dismantling shall be conducted either by hand, with stones stacked as they are removed, or on less “sensitive” walls to use an excavator with a thumb to grab each stone and build a stockpile. Significant ground disturbance below the wall shall be avoided.

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- Once construction and access in the area has been completed, the wall shall be rebuilt to pre-dismantled conditions or better. If rebuilding a stone wall can not be placed on the same alignment that existed prior to temporary removal, approval from the National Grid Environmental Scientist and Property Legal is required. **Note that if the wall represents a legal property boundary or is historically or culturally significant (or was previously determined to be in a very high quality condition), a professional stone masonry company may be required to document wall alignment, and conduct the dismantling and rebuilding.**

10.0 Avian Nest Removal

Avian nest removal shall be done in accordance with EG-304. Consult the National Grid Environmental Scientist prior to removing any nests. There are seasonal restrictions of the removal of avian nests and federal or state permits may be necessary prior to removal.


11.0 Drilling Fluids and Additives

When installing subsurface structures, there may be a need to utilize drilling aids such as slurries, borehole sealants, and other additives. All necessary steps shall be taken by National Grid personnel and contractors to prevent potential adverse effects on drinking water aquifers, groundwater quality, and wetlands when utilizing drilling aids. Efforts should be made to utilize natural bentonite clay-type materials, in place of polymer-based drilling aids. Regardless of the specific product type, the following requirements shall be met:

- Drilling aids must be NSF certified and manufactured to NSF-ANSI 60 standards.
https://www.nsf.org/newsroom_pdf/NSF-ANSI_60_watemarked.pdf
- Product use must be in accordance with manufacturer's specifications and instructions.
- National Grid personnel or their contractor shall provide all the necessary information regarding the proposed product to be used to National Grid's Environmental Sustainability, Compliance and Licensing & Permitting Department as early as possible in the project planning phase. If the work is being performed by a contractor, this information must be included as part of their initial bid package.
- If polymer-based products are proposed for use, product information shall be included in all related environmental regulatory filings and frac-out plans, if possible.
- A qualified individual shall be designated who will confirm/verify and document the specific use of a drilling aid at each location. This will include add-mix ratios, surface area treated, volume of water within excavation, volumes/weight of additives used, and any other measurements specified by the manufacturer. No mixing will be allowed in the drilled shaft excavation.
- The Contractor or National Grid crew performing the work is responsible for neutralizing all drilling products, as applicable, in accordance with the manufacturer's specifications. This shall be performed following removal from the excavation and while held in holding tanks. A

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qualified person shall be designated by the Contractor who will confirm/verify and document the appropriate neutralization activity at each location, as necessary.

- Waste drilling aids (neutralized or not) or soils that may have come into contact with drilling aids will not be disposed of on National Grid properties, discharged to any ground surface or subsurface, waterbodies, wetlands or placed on 3rd party properties.
- All product use must be completed in strict adherence with the management, storage, mixing, transporting, disposing and any other requirements of state and federal regulatory approvals and permits, as applicable.
- Relevant documentation shall be maintained by the Contractor or National Grid crew performing the work, and shall include volume of material treated and disposed and the location/facility at which it was disposed.
- National Grid will not be identified as the disposal generator for any polymer based slurry waste or additives generated by Contractor activities.
- The Contractor or National Grid crew performing the work assumes full responsibility for the safe storage of all polymers and additives during use and also assumes full responsibility for improper use and application of said polymers and additives that are deemed to have contravened aquifer and/or groundwater quality.
- National Grid reserves the right to refuse and terminate the use of any specific drilling aid at any time.

Regardless of the type of drilling aid utilized, the Contractor or National Grid crew performing the work is responsible for properly treating, containerizing, testing, transporting and disposing of any/all fluids and solids generated during their activities. All wastes must be disposed of in accordance with federal and state regulations. Relevant documentation shall be maintained and shall include volume of material treated and disposed and the location/facility at which it was disposed.


12.0 Water Withdrawal for Geotechnical Investigations

The use of water during geotechnical drilling operations may be required, and is most common during the “drive and wash” drilling technique, where 4- or 6-inch diameter casing is driven into the ground, and the soil inside the casing is washed out using a pump and hollow rods. Soil samples are generally collected at periodic intervals using a split spoon sampler (e.g., every 5 vertical feet).

The National Grid Environmental Scientist and/or Project Environmental Monitor may approve withdrawals from wetlands and waterways on a case-by-case basis should the geotechnical team advise no other options are available. Generally, the amount of water required for withdrawal is between 100 and 200 gallons, and the water is then recycled continuously in the drilling process. Certain scenarios may require additional water usage if water is lost down the boring (e.g., lost due to bedrock fractures during rock coring). The following general guidance should be adhered to when determining whether water withdrawals may be allowed during geotechnical investigations on the ROW. Approval from the National Grid Environmental Scientist and/or Project Environmental Monitor is required prior to initiating water withdrawals during geotechnical investigations.

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- Withdrawals from perennial streams, ponds, lakes and large wetlands systems are preferred over small isolated wetlands to ensure the water level, water table, and hydroperiod are not affected. Prior to start of work, the Contractor shall identify which water source they prefer to withdraw from. The National Grid Environmental Scientist and/or the Project Environmental Monitor will confirm whether these sources are appropriate.
- Care should be taken to avoid alteration of wetlands or the beds and banks of surface waters. Examples of alterations include, but are not limited to, the following:
 - (a) the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;
 - (b) the lowering of the water level or water table;
 - (c) the destruction of vegetation; and
 - (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of receiving waters.
- Wetlands and waterways providing habitat for rare species should be avoided unless all other options are exhausted. Under no circumstances should water be withdrawn from a Vernal Pool.
- Withdrawal pipes or stingers should be elevated off the bottom of wetlands and streams during the duration of pumping. Additionally, fabric or screening should be covering the withdrawal pipes to eliminate inadvertent harm to wildlife.
- Withdrawals should be performed in a manner that does not damage vegetation, disturb sediment, or result in the release of temporary or permanent fill material (e.g., sediment, spoils, or turbid water) into the wetland/waterway. Additional detail from geotechnical experts may be required to solidify BMP recommendations.
- Any water used for geotechnical drilling operations (including water withdrawn from surface water, brought on-site, or from other sources) shall be discharged into the open borehole or to an upland area such that the water infiltrates to the ground and is not discharged to a wetland or surface water resource area. Consultation with the National Grid Environmental Scientist and/or the Project Environmental Monitor is required if this is not feasible. At no time should water withdrawals result in a temporary or permanent fill/discharge of material (e.g. sediment, spoils, or turbid water) into the wetland or waterway.
- If water sourcing options is not determined prior to mobilization, necessary water shall be brought in by tank truck. Should withdrawal from surface water sources become necessary during soil boring work, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be notified prior to beginning withdrawal. If initial withdrawal from surface water is approved by the National Grid Environmental Scientist and/or the Project Environmental Monitor, the driller may withdraw from the surface water, as long as the above criteria are met.
- If excessive water withdrawal is necessary, the National Grid Environmental Scientist and/or the Project Environmental Monitor shall be consulted to determine whether the water source is appropriate for withdrawal.
- In New Hampshire, withdrawals made from state-owned property require written permission from

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the agency with primary responsibility for monitoring and/or maintaining the site.

13.0 Gates

When not in use, gates shall be locked with a company-approved lock or double locked with the property owner's lock. New gates may be installed during a project, however, installation of a gate requires permission from the property owner, and may require environmental permitting. Consult with National Grid Real Estate and the National Grid Environmental Scientist prior to installing a new gate, as well as with the appropriate engineering department for the current company gate specifications. Refer to BMPs in **Appendix 4**. Installation of ROW access restrictions (e.g., stone, bollards, other) at road crossings also require consultation with the National Grid Environmental Scientist and Property Legal.

14.0 Signage

Specific signage may be required by permits or be specified in the EFI to limit access in certain sensitive areas. Signs shall be used to clarify allowed access and sensitive areas, such as:

- "No snow stockpiling beyond this point";
- "Approved access (to structures A-F)";
- "Do not cross this area until construction mats are in place";
- "No vehicle crossing";
- "Areas to avoid"; and
- "Environmentally Sensitive Area – Keep Out."

Signs shall be used in conjunction with snow fencing or other physical barriers as demarcation for sensitive areas (e.g., rare species areas, sensitive archeological locations, etc.) that need to be protected and avoided by construction activities. In addition, permit signs required by the regulatory agencies shall be present (i.e. MADEP, RIDEM, EPA (SWPPP), ACOE, etc) at construction sites and/or ROW access points. Construction signage shall be installed and maintained by the contractor performing the work during the project. Absence of signage does not eliminate the need to comply with access plans, permit conditions, and other regulatory requirements. Refer to BMPs in **Appendix 4**.


15.0 Refueling and Maintenance Operations

15.1 Spill Prevention and Response Plan

Spill controls shall be provided on every field vehicle. Bulk storage of fuels (55 gallons or greater) shall be approved by the National Grid Environmental Scientist prior to being brought on site. The need for a field spill plan shall be evaluated specific to the project for regulatory requirements under SPCC regulations or local ordinances. A field spill plan would include information on fuels and oils being used, approximate amounts in each container or type of equipment, location, fueling location, secondary containment, response and notification procedures, including contact phone numbers, etc. All

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personnel shall be briefed on spill prevention and response prior to the commencement of construction. The state-specific EI-501 and EG-502 shall be followed in the event of a spill.

Typical construction activities do not require the use or storage of large quantities of oil or hazardous materials (i.e., greater than 55 gallons). However, oil and/or hazardous materials (OHM) may be required in limited quantities to support construction or vehicle operations. Best practices shall be followed in the use and storage of OHM which include but are not limited to: storage and refueling greater than 100 feet from resource areas; maintenance of spill response equipment at work locations sufficient to handle incidental releases from operating equipment; general training for on-site personnel for spill clean up response for incidental releases of OHM; and contracting with an on-call spill response contractor that is capable of managing incidental and significant releases of OHM. There may situations that additional precautions shall be required for the storage or use of OHM (i.e., within wellhead protection areas, GA/GAA areas, Zone IIs). Storage of OHM shall be done in accordance with any applicable regulatory requirements.

15.2 Field Refueling

Small equipment such as pumps and generators shall be placed in small swimming pools or on absorbent blankets/pads, to contain any accidental fuel spills. Small swimming pools with absorbent blankets/pads, and/or other secondary containment, shall be used for refueling of fixed equipment in wetlands and should be maintained to prevent accumulation of precipitation.

15.3 Grease, Oil, and Filter Changes

Routine vehicle maintenance shall not be conducted on project sites.


15.4 Other Field Maintenance Operations

When other vehicle or equipment maintenance operations (such as emergency repairs) occur, company personnel or contractors at field locations shall bring vehicles or equipment to an access location a minimum of 100 feet away from environmentally sensitive areas (e.g., wetlands or drinking water sources). A paved area, such as a parking lot or roadway, is a preferred field maintenance location to minimize the possibility of spills or releases to the environment.

Crews shall take all usual and reasonable environmental precautions during repair or maintenance operations. Occasionally, it is infeasible to move the affected vehicle or equipment from an environmentally sensitive area to a suitable access area. When this situation occurs, precautions shall be taken to prevent oil or hazardous material release to the environment. These precautions include (but are not limited to) deployment of portable basins or similar secondary containment devices, use of ground covers, such as plastic tarpaulins, and precautionary placement of floating booms on nearby surface water bodies.

15.5 Tools and Equipment

Cleaning of tools and equipment shall be conducted away from environmentally sensitive areas (such as wetlands, buffer zones or drinking water sources) to the maximum extent possible. A paved area such

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as a parking lot or roadway is preferred, to minimize the possibility of spill or release to the environment. Crews shall wipe up all minor drips or spills of grease and oil at field locations.

16.0 Stabilization Deadlines for Projects Subject to EPA Construction General Permit

16.1 Deadlines to Initiate Stabilization Activities (Permanent and Temporary)

Soil stabilization measures shall be implemented immediately whenever earth-disturbing activities have permanently or temporarily ceased on any portion of the project. The following are some examples of activities that constitute initiation of stabilization:

- Preparing the soil for vegetative or non-vegetative stabilization;
- Applying mulch or other non-vegetative product to the exposed area;
- Seeding or planting the exposed area;
- Finalizing the arrangements to have stabilization product fully installed in compliance with the deadlines to complete stabilization in Section 15.2 below.

16.2 Deadlines to Complete Stabilization Activities (Permanent and Temporary)

As soon as practicable, but no later than 14 calendar days or 7 calendar days (for areas discharging to a sensitive water) after the initiation of soil stabilization measures commence the following should be completed:

- For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and
- For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

16.3 Vegetative Stabilization (all except for arid, semi-arid, or on agricultural lands)


- Provide established uniform vegetation (e.g., evenly distributed without large bare areas), which provides 70% or more of the density of coverage that was provided by vegetation prior to commencing earth-disturbing activities. Avoid the use of invasive species as cover.
- For final stabilization, vegetative cover must be perennial; and
- Immediately after seeding or planting a disturbed area to be vegetatively stabilized, a non-vegetative erosion control must be implemented to the area while the vegetation is becoming established. Examples include; mulch and rolled erosion control products.

16.4 Vegetative Stabilization (Agricultural Lands)

- Disturbed areas on land used for agricultural purposes that are restored to their pre-construction agricultural use are not subject to vegetative stabilization standards.

16.5 Non-Vegetative Stabilization

If using non-vegetative controls to stabilize exposed portions of your site, or if you are using such controls to temporarily protect areas that are being vegetatively stabilized, you must provide effective

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non-vegetative cover to stabilize any such exposed portions of the site. Examples of non-vegetative stabilization techniques include, but are not limited to, rip-rap, gabions, and geotextiles.

17.0 Clean-up and Restoration Standards

The following steps shall be taken once construction has been completed at each location along the ROW or within the project site. The following are minimum guidelines for clean-up and stabilization standards. Please refer to permit conditions for project-specific related standards. Refer to the EFI for applicable permit requirements and to determine if the site needs to be reviewed and approved by the permitting authorities prior to removal of erosion controls.

17.1 Removal of Sedimentation and Erosion Controls

After all work has been satisfactorily completed and vegetation has been re-established to a minimum of 75% cover, and upon approval by the National Grid Environmental Scientist, all non-biodegradable materials (e.g., siltation fencing, straw bale strings, stakes, straw wattle mesh casing, etc.) shall be disposed of properly off-site.

Dependent on permit requirements, sedimentation and erosion controls may not be allowed to be removed until after inspection and approval by one or more permitting authority. In most cases, removed straw bales may be used to mulch disturbed areas. Remaining straw bales that do not block the flow of water may be left in place unless they are required to be removed pursuant to permit conditions. Straw bales that block the flow of water shall be removed.

Prior to project construction being completed, the project team will develop post-construction inspection intervals to ensure timely removal of temporary BMPs. BMPs will be removed when the area is stabilized, which typically occurs when the area has either naturally stabilized (75% cover), or seed and mulch that was installed has achieved 75% cover.


17.2 In-Situ Restoration

Unless otherwise specified in permits or prescribed by the National Grid Environmental Scientist or the Project Environmental Consultant, all disturbed areas, including stream banks, wetlands and access routes, shall be restored following the completion of work. When the work is completed and construction mats have been removed, the National Grid Environmental Scientist or Project Environmental Consultant shall conduct an inspection. Wetlands shall be inspected for build up of sand or other materials that may have fallen through construction mats. Care shall be taken to inspect wetland crossings carefully after construction mat removal to ensure any materials are properly removed and disposed of off-site.

Restoration of Soil Compaction. If rutting or soil compaction following construction mat removal is observed, the area shall be returned to pre-existing conditions, and comparable to the surrounding area, by light hand raking or by back-blading with machinery. Restoration shall be overseen by the Project Environmental Consultant or National Grid Environmental Scientist. Deep ruts (>12") shall be filled in using available, loose soil from the work area.

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Seeding and Mulching. If adequate root and seed stock are absent and have been stripped from the area, graded sites shall be promptly stabilized by applying an approved seed mix and mulching with straw to reduce erosion and visual impact. Seeding and mulching shall be completed as soon as possible following completion of work at the site. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Wetland areas where adequate root and seed stock are absent will be seeded using an approved wetland native seed mix. For some wetland areas, natural re-vegetation may be more appropriate than seeding disturbed sites. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

If needed, the import of quality topsoil onto the ROW will be required. Topsoil should be tested, and approved by the Project Environmental Consultant or National Grid Environmental Scientist to determine its suitability for site conditions. Fertilizers will be approved on a case-by-case basis.

For upland areas, the disturbed vegetation and soil shall be restored and stabilized⁴ by regrading the area to pre-existing conditions, if needed, seeding (if adequate root and seed stock are absent) and mulching the exposed soil, and removing strings and stakes from straw bales and using broken up straw bales for the mulch. Siltation fencing, strings and stakes shall be removed for disposal as ordinary waste. Refer to BMPs in **Appendix 4** for seed mix tables and mulch ratio tables.

For sites with excess boulders, additional boulders could be used at proposed and existing gate locations to use on either side of the gates as a deterrent for unauthorized vehicle access or be placed along the edges of work pads where steep slopes are present for safety purposes. The final placement of boulders should be reviewed prior to installation with Real Estate and the National Grid Environmental Scientist or Project Environmental Consultant.


Unless otherwise specified in Project-specific permit conditions, the National Grid Environmental Scientist or Project Environmental Consultant shall develop an inspection frequency to monitor restored areas for stabilization, germination and successful revegetation.

17.3 Invasive Species

All equipment shall be certified clean⁵ utilizing the attached form (**Appendix 5**) or equivalent as approved by the vendor prior to mobilization to the work site. The vendor shall use the certification from provided as **Appendix 5** to document compliance with invasive species management BMPs. Clean is defined as being free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site. Any equipment that has been placed or used within areas containing invasive species within the project site shall be cleaned of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials at the site of the invasive species prior to being moved to other areas on the project

⁴ For projects subject to the 2012 CGP, stabilization is required within 14 days, or within 7 days for sensitive areas.

⁵ The **Appendix 5** certification form (or equivalent as approved by National Grid Environmental Scientist) shall be used to document the clean certification

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site to prevent the spread of invasive species from one area to another⁶. **Equipment shall be cleaned prior to being removed at the completion of the project: exceptions to this requirement shall be determined on a case-by-case basis.** Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.4 Cleaning of Equipment

At the completion of the project, equipment shall be cleaned prior to being de-mobilized to prevent tracking of material onto roads and causing safety issues. Consult with the National Grid Environmental Scientist prior to discharging or disposing of any waste water or waste material from the cleaning of equipment.

17.5 Access Roads

Constructed gravel roads shall be left in place following project completion unless permit conditions require their removal. Refer to the specific permit conditions for these provisions. If the road is to be removed, the crushed stone and geotextile fabric shall be removed from the work site. Seeding and/or mulching of gravel roads is generally not required, unless necessary to prevent erosion. Pre-existing sandy soils within mapped rare turtle habitat shall not be seeded unless directed by the National Grid Environmental Scientist so as to not alter nesting habitat.

17.6 Stone Work Pads

Unless permit conditions or property owner's require the removal of constructed stone work pads following project completion, constructed work pads shall be left in place. Refer to the specific permit conditions for these provisions.


17.7 Construction Materials on ROWs

As soon as the structure work has been completed, all used parts and trash are to be picked up and removed from the project site. Retired poles shall be removed in accordance with National Grid Engineering Standard SP.06.01.301. In some cases, the used material from structure work may be temporarily stored at the work area by placing it out of the wetlands or other sensitive resource area until work in the adjacent areas has been completed. However, treated wood poles shall never be stored in standing water or in wetlands. If the project is cancelled, all material shall be removed from the project site. Excess material brought to the project site shall be removed upon project completion. Consult with the National Grid Environmental Scientist on whether the work site shall be restored in addition to the measures outlined above

17.8 Improved Areas

Yards, lawns, agricultural areas, and other improved areas shall be returned to a condition at least equal to that which existed at the start of the project. Off-ROW access shall never be assumed and shall be coordinated through Real Estate before being implemented. Depending on the access point, construction matting or other BMPs may be required to prevent ruts, lawn damage, or other property damage.

⁶ On ROW projects where multiple wetlands may be dominated by the same invasive species, cleaning may not be required for movement along the ROW. Check with the National Grid Environmental Scientist for guidance.

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Restoration following the completion of work and any use of improved areas shall be conducted in accordance with the measures outlined above.

17.9 Property Damage

All damage to property occurring as a result of a project shall be immediately repaired or replaced. In some locations, it may be desirable to document pre-existing damage prior to work commencing in that area in order to demonstrate afterwards that the damage did not result from the project. Work crews, the Project Environmental Consultant or the National Grid Environmental Scientist shall document repairs that were performed in response to damage from unauthorized vehicle use.

17.10 Overall Work Site

Upon satisfactory completion of work, the construction personnel shall remove all work-related trailers, buildings, rubbish, waste soil, temporary structures, and unused materials belonging to them or used under their direction during construction, or waste materials from previous construction and maintenance operations. All areas shall be left clean, without any litter or equipment (wire, pole butts, anchors, insulators, cross-arms, cardboard, coffee cups, water bottles, etc.) and restored to a stable condition and as near as possible to its original condition, where feasible. Debris and spent equipment shall be returned to the operating facility or contractor staging area for disposal or recycling (cardboard) as appropriate in accordance with EI-111.

17.11 Material Storage/Staging and Parking Areas

Upon completion of all work, all material storage yards, staging areas, and parking areas shall be completely cleared of all waste and debris. Unless otherwise directed or unless other arrangements have been made with an off ROW or off-property owner, material storage yards and staging areas shall be returned to the condition that existed prior to the installation of the material storage yard or staging area. Regardless of arrangements made with a landowner, all areas shall be restored to their pre-construction condition or better. Also any temporary structures erected by the construction personnel, including fences, shall be removed by the construction personnel and the area restored as near as possible to its original condition, including seeding and mulching as needed.

18.0 Notification of Emergency Work


Because it is sometimes difficult to identify wetlands and other sensitive environmental areas, the National Grid Environmental Scientist shall be notified within 24 hours or by the next working day whenever emergency off-road repair work takes place. Although the routine maintenance and emergency repair work is generally allowed, due to site conditions or the scope of the project, notification to the regulating agencies may be required.

19.0 Appendices

APPENDIX 1:	Glossary
APPENDIX 2:	Acronyms

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APPENDIX 3:	Storm Water, Wetlands & Priority Habitat Environmental Compliance Site Inspection / Monitoring Report Form
APPENDIX 4:	BMP Drawings and Guidelines
APPENDIX 5:	Certification Sheet for Invasive Species Control
APPENDIX 6:	Snow Disposal Guidelines

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Appendix 1 – Glossary

Access Road – An existing, periodically maintained road often consisting of gravel and/or exposed soils or vegetated with grasses but devoid of woody vegetation, that is visible on aerial photography and shown on ROW T-sheets. May include newly permitted permanent roads (i.e., roads to be constructed in accordance with a project-specific permit).

Access Route - A pathway previously used or proposed to be used by crews for access along the ROW. Routes may be shown on ROW T-sheets or previous project access plans but are not improved as maintained gravel/exposed soil roads. Access routes may be mown and can consist of trails utilized by recreational vehicles.

Action Logs – Project-specific log used to document action items required for permit compliance. The log identifies timeframes for completion and responsible parties. The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly, or more frequent, basis.

Bank – The transitional slope immediately adjacent to the edge of a surface water body, the upper limit of which is usually defined by a break in slope, or, for a wetland, where a line delineated in accordance with applicable state and federal regulations that indicates a change from wetland to upland.

BMP – Best Management Practice. Individual engineered constructions or operating procedures intended to minimize and mitigate soil disturbance, erosion, sedimentation, turbid discharges, and/or impacts to sensitive receptors.

Clean - Free of plant matter (stems, flowers, roots, etc), soil, or other deleterious materials prior to being brought to the project site.

Clean Gravel – Gravel is a type of coarse-grained soil that consists of small stones and other mineral particles. Clean Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001) Clean Gravel will not have fine materials that could lead to a turbid discharge.


Clean Stone (Crushed Stone) – Clean Stone (Crushed Stone) shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Clean Stone will not have fine materials that could lead to a turbid discharge.

Clearing – The cutting of trees and large bushes by hand and/or mechanical means.

Compost Socks – Tubular devices comprised of non-degradable, photodegradable, or biodegradable mesh tubing containing organic compost matrix. Compost socks are effective for intercepting site runoff, trapping

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sediment, and treating for soluble pollutants by filtering stormwater runoff. . Compost socks are a useful sedimentation control device along construction site perimeters, as check dams in drainage channels, as a slope interruption practice on long and/or steep slopes, and around drain or street curb inlets.

Construction Mats - Construction, swamp, and timber mats (“construction mats”) are generic terms used to describe structures that distribute equipment weight to minimize disturbance to wetland soil and vegetation while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes.

Corduroy Road – Corduroy roads are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another.

Dewatering Basin – An established containment area for saturated materials and pumped discharges. This measure is used for the purpose of de-watering soils prior to transport off site or for use in another location on site, and for allowing suspended sediment to settle out of pumped discharges.

Detention/Retention Basin – A detention/retention basin is designed for the purpose of detaining or retaining water. A dewatering basin is a form of detention basin

Dewatering – Use of a system of pumps, pipes and temporary holding dams to drain or divert waterways or wetlands, or lower the groundwater table before and during excavation activities.

Drainage Ditch or Swale – A clearly noticeable channel that is typically dry, except after precipitation events. Intermittent and perennial streams and rivers are not included in this definition.

Dredge – To dig, excavate, or otherwise disturb the contour or integrity of sediments in the bank or bed of a wetland, a surface water body, or other area within the regulating bodies’ jurisdiction.

Dredge Spoils – Material removed as the result of dredging.


Embankment – A protective bank constructed of mounded earth or fill materials located between a roadway (or rail bed) and a seasonal stream or other wetland.

Environmental Field Issue – Document that contains copies of all project-specific environmental permits and summarizes all environmental permit conditions. The EFI is prepared by the Project Environmental Consultant or the National Grid Environment Scientist and copies are provided to the Project Manager, Construction Supervisor(s), and other team members as appropriate.

Environmental Monitoring Records – Examples of checklists and/or monitoring reports suggested for use by the Company Environmental Engineer to document conformance of the project with this Environmental Guidance and or project specific permit/license conditions.

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Environmental Scientist – Formerly Environmental Engineer. The National Grid Environmental Department representative for the project or the territory where the work is located. For a map of Environmental Department staff territories, refer to the Environmental page of the National Grid infonet.

Environmentally Sensitive Areas – Examples of environmentally sensitive areas that may be found on National Grid properties are rivers, streams, ponds, lakes, wetlands, bogs, swamps, salt marshes, rare species habitat, wellhead protection areas, cultural sites, parks, preserves, schools and as otherwise defined by Federal, State or local regulations. Refer to EG-301.

Erosion Controls – The utilization of methods to prevent soil detachment and minimize displacement or washing down slopes by rainfall or run-off. Common practices include, but are not limited to:

- (a) Temporary and Permanent Seeding.
- (b) Mulching, Soil Binders, Tackifiers.
- (c) Erosion Control Blankets.
- (d) Hydraulic Erosion Control.

Excavate/Excavation – To dig, remove, or form a cavity or a hole in an area within the department's jurisdiction.

Fill (n.) – Any rock, soil, gravel, sand or other such material that has been deposited or caused to be deposited by human activity.

Fill (v.) – To place or deposit materials in or on a wetland, surface water body, bank or otherwise in or on an area within the jurisdiction of the department.

Flats – Relatively level landforms composed of unconsolidated mineral and organic sediments usually mud or sand, that are alternately flooded and exposed by the tides and that usually are continuous with the shore.

Frozen Condition – Field conditions when the upper portion of the ground surface freezes or when areas of standing water freeze solid such that vehicle passage over these areas is supported without any resulting soil disturbance. The frozen conditions must have been affected by severe cold (maximum daily temperatures less than 32 degrees F) for a continuous 2-week period.


GAA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment, and are located in one of the three areas described below.

a) The state's major stratified drift aquifers that are capable of serving as a significant source for a public water supply ("groundwater reservoirs") and the critical portion of their recharge area as delineated by DEM;

b) The wellhead protection area for each public water system community water supply well. Community water supply wells are those that serve resident populations and have at least 15 service

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connections or serve at least 25 individuals, e. g. municipal wells and wells serving nursing homes, condominiums, mobile home parks, etc.; and

c) Groundwater dependent areas that are physically isolated from reasonable alternative water supplies and where existing groundwater warrants the highest level of protection. At present only Block Island has been designated as meeting this criterion.

GA – Rhode Island groundwater classification, groundwater resources that are known, or presumed to be suitable for drinking water use without treatment. However, groundwater classified by GA does not fall within any of the three priority areas described under the GAA classification.

Grade/Grading – The movement of soil and fill material to change the elevation of the land. The term refers to the combined actions of excavating and filling to change elevation or shape.

Grubbing – The removal of stumps/roots by mechanical means during site preparation activities.

Immediately - As soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

In-kind Replacement - Replacement using the same material, functional inverts, diameter and length as the existing item. In-kind replacement includes the substitution of a structure with a similar structure in approximately the same location as is practicable, and is approximately the same in design. The design may be altered to meet applicable utility standards, and may include alternate materials designed to prolong the life of that service.

Intermittent Stream – A stream that flows for sufficient time to develop and maintain a defined channel, but which might not flow during dry portions of the year.


In the Dry – Work done either during periods of low water or behind temporary diversions, such as Earth Dike / Drainage Swale and Lined Ditches designed and installed in accordance with best management practices.

Limit of Work/Disturbance – The approved project limits within regulated areas. All project related activities in regulated areas must be conducted within the approved limit of work/disturbance. The limit of work/disturbance shall be depicted on the approved permit site plans and in the EFI plans. Where it is warranted National Grid may require that these limits be identified in the field by flagging, construction fencing, and/or perimeter erosion controls.

Long-Term Restoration Logs - Project-specific log used to document restoration required following the completion of construction or as areas of the project have been completed (i.e., segments of ROW for a multi-mile project). The log is typically updated by the Project Environmental Consultant or the National Grid Environment Scientist and circulated to the project team on a weekly basis.

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Low Flow Conditions – Low water flow that generally occurs during the summer, as a result of decreased precipitation and the removal of water by increased evaporation and evapotranspiration by vegetation. Work done under low-flow conditions minimizes the potential for environmental damage. The USACE defines the calendar dates for low flow conditions in its New England state-specific Programmatic General Permits.

Low Ground Pressure – Equipment that meets the USACE GP state-specific defined Pounds per Square Inch (PSI) ground pressure when loaded. Use of LGP equipment **requires approval** from the National Grid Environmental Scientist.

Marsh – A wetland:

- a) That is distinguished by the absence of trees and shrubs;
- b) Dominated by soft-stemmed herbaceous plants such as grasses, reeds, and sedges; and
- c) Where the water table is at or above the surface throughout the year, but can fluctuate seasonally.

Methods – Are the construction practices and procedures that take place through choosing the proper equipment, trucks and labor to execute the earth moving activities based on the existing conditions and implementing creative and sensitive scheduling for the daily activities.

NHESP - Natural Heritage Endangered Species Program; a department within the Massachusetts Division of Fisheries and Wildlife that is responsible for protecting the 176 species of vertebrate and invertebrate animals and 259 species of native plants that are officially listed as Endangered, Threatened or of Special Concern in Massachusetts.

Perennial – A stream that contains water at all times except during extreme drought.

Permanently Ceased – Is applicable to earth disturbance activities when clearing and excavation within any area of the Project that will not include permanent structures has been completed.


Person-in-Charge – A National Grid Project Engineer, Manager, Supervisor, Field Construction Coordinator or equivalent Contractor personnel assigned to oversee and coordinate work activities.

Processed Gravel – Processed Gravel shall meet the requirements in accordance with National Grid Standard Construction Specification for Electric Stations (Engineering Standard SP.08.00.001). Processed Gravel will not have fine materials that could lead to a turbid discharge. Gravel consisting of inert material that is hard, durable stone and is free from loam and clay, surface coatings and deleterious materials.

Regulating Body – Federal, State, or local authority that has jurisdiction over resource areas that may be impacted by company operations

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Regulated Wetland Area – Those areas that are subject to federal, state or local wetland regulation, including certain buffer or adjacent areas.

Repair – The restoring of an existing legal structure by partial replacement of work, or broken, or unsound parts (Env-Wt 101.73).

Replacement – The substitution of a new structure for an existing legal structure with no change in size, dimensions, location, configuration, construction, or which conforms in all material aspects to the original structure

Right-of-Way – A corridor of land where National Grid has legal rights (either fee ownership, lease or easement) to construct, operate, and maintain an electric power line and/or natural gas pipeline and may include work on customer owned properties.

River – A watercourse that is larger than a perennial stream and flows all year long.

Routine Utility Rights-of-Way Maintenance Activity – Includes but is not limited to vegetation management and repair or replacement of existing utility structures.

Sedimentation Controls – Silt fences, straw bales, compost socks/berms and other barrier devices strategically placed to intercept and treat sediment-laden site runoff.

Sensitive Water - Includes any sediment or nutrient impaired water or a water that is identified by the state, tribe or EPA as Tier 2, 2.5 or Tier 3 for antidegradation purposes.

Siltation Curtain – An impervious barrier erected to prevent silt and sand and/or fines from being washed into a wetland, surface water body or other area of concern.


Surface Water Body or Surface Waters – Those portions of waters which have standing or flowing water at or on the surface of the ground.

Spill Prevention, Control and Countermeasure Plans – Required for site operations that involve the storage of 1,320 gallons or greater of fuel and oils, both in storage containers and stored in equipment. Response actions to spills and releases are specified in these plans.

Stormwater Pollution Prevention Plan – A site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at a construction site; (2) describes stormwater control measures to reduce or eliminate pollutants in stormwater discharge from a construction site; and (3) identifies procedures the operator will implement to comply with the terms and conditions of EPA NPDES Construction General Permit (CGP). SWPPPs must be prepared, maintained on-site, and amended as necessary in order to obtain NPDES permit coverage for specific construction site stormwater discharges under the EPA NPDES CGP.

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Temporarily Ceased - Is applicable when there are earth disturbance activities such as clearing, grading, and/or excavation that are not complete, but will be idle in one area for a period of up to 14 or more calendar days, and which will resume in the future. The 14 calendar day timeframe begins as soon as you now that construction work on a portion of the Project will be left incomplete and idle. In circumstances where there are unanticipated delays and you do not know at first how long the work stoppage will continue, the requirement to immediately initiate stabilization is triggered as soon as you know with reasonable certainty that work will be stopped for 14 or more additional calendar days.

Tidal Wetlands – A wetland whose vegetation, hydrology or soils are influenced by periodic inundation or tidal waters.

Topsoil – The uppermost part of the soil, ordinarily moved in tillage, or its equivalent in uncultivated soils and ranging in depth from 2 to 10 inches.

Turbidity – The condition in which solid particles suspended in water make the water cloudy or even opaque in extreme cases.

United States Geological Survey Topographic Map – A map that uses contour lines to represent the three-dimensional features of a landscape on a two-dimensional surface. These maps use a line and symbol representation of natural and artificially created features in an area.

Wetland – An area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation (more than 50 percent) typically adapted for life in saturated soil conditions (hydric soils). Wetlands include but are not limited to swamps, marshes, bogs, and similar areas.


Work Site – An area where work is performed.

Worker – Company employee, contractor, consultant working on site.

Zone II - Massachusetts - That area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at safe yield, with no recharge from precipitation). It is bounded by the groundwater divides which result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone IIs shall extend up gradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary).

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Appendix 2 – Acronyms

ASTM	American Society for Testing and Materials
BMP	Best Management Practices
EFI	Environmental Field Issue
EG	Environmental Guidance
EPA	Environmental Protection Agency
GA/GAA	Rhode Island Groundwater Classifications – see glossary
LGP	Low Ground Pressure
MA	Massachusetts
MA DEP	Massachusetts Department of Environmental Protection
MassDOT	Massachusetts Department of Transportation
NE	New England
NH	New Hampshire
NH DES	New Hampshire Department of Environmental Services
NHESP	Natural Heritage Endangered Species Program
NPDES	National Pollutant Discharge Elimination System
OHM	Oil and/or Hazardous Materials
PSI	Pounds per square inch
RI	Rhode Island
RI DEM	Rhode Island Department of Environmental Management
RI CRMC	Rhode Island Coastal Resources Management Council
RI SESC	Rhode Island soil erosion and sediment control
ROW	Right-of-Way
RTE	Rare, Threatened or Endangered
SPCC	Spill Prevention, Control and Countermeasure
SWPPP	Storm Water Pollution Prevention Plan
TOY	Time-of-Year
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VT	Vermont


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 <div style="text-align: center;"> National Grid Environmental Guidance </div>		Doc No.:	EG-303NE
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VT DEC Vermont Department of Environmental Conservation

Zone II Massachusetts Groundwater Protection district – see glossary


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Appendix 3

See EG303NE_Appendix3_Reporting Form published separately

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Appendix 4 – BMPs

See EG303NE_Form1 for a list of BMPS

See EG303NE_Form2 for BMP details

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APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for **National Grid Projects** shall be required to Certify their equipment⁷ {each piece of equipment used on site} as 'clean'⁸.

_____ (name of firm) hereby Certifies that
 _____ (make, model, and/or type)
 _____ (equipment ID tag or #) meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and
2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.
3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.


_____ (signed) _____ (dated)
 _____ (printed name) _____ (title)
 _____ (Firm)

The signed original of this form {one for each piece of equipment (or lot⁹ of mats)} is to be given to the NG Construction Supervisor assigned to the project.

⁷ Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).

⁸ With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.

⁹ Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.


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Appendix 6 – Snow Disposal Guidelines

See EG303NE_App6 published separately

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SUBJECT ROW Access, Maintenance and Construction Best Management Practices for New England		REFERENCE EP-3; Natural Resource Protection


	BMP #	Measure
Sediment & Erosion Controls	SEC-1	Weed free bale barrier
	SEC-2	Sediment control fence
	SEC-3	Silt fence / weed free barrier
	SEC-4	Silt Soxx
	SEC-5	Straw Wattle
	SEC-6	Erosion Control Blanket - Ditch
	SEC-7	Erosion Control Blanket - Slope
	SEC-8	Hydroseeding with Tackifier (slope stabilization)
	SEC-9	Mulch materials, rates and uses (from NY)
	SEC-10	Seeding options - Upland Seed Mixes
	SEC-11	Seeding options - Wetland Seed Mix
	SEC-12	Distribution Pole Erosion Control

Crossing Measures	CM-1	Prefabricated mats
	CM-2	Construction mat bridge
	CM-3	Construction mat layout (with transition)
	CM-4	Construction mat layout (with transition & BMPs)
	CM-5	Construction mat - Air Bridge
	CM-6	Corduroy road
	CM-7	Rock Ford
	CM-8	Temporary construction entrance / exit
	CM-9	Temporary construction culvert
	CM-10	Access way stabilization
	CM-11	Construction signage
	CM-12	Construction Mat Anchoring

Advanced Applications	AA-1	Reinforced silt fence
	AA-2	Sediment filter
	AA-3	Stone check dams
	AA-4	Straw / haybale check dam
	AA-5	Waterbar
	AA-6	Sandbag check dam
	AA-7	Earth dike
	AA-8	Drainage swale and lined ditch
	AA-9	Sedimentation basin
	AA-10	Dewatering basin - Small scale
	AA-11	Dewatering basin - Large scale
	AA-12	Dirtbag
	AA-13	Concrete waste sump

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	AA-14	Outpak concrete washout
Advanced Applications	AA-15	Barrier fence (construction fence)
	AA-16	ROW gates / fences
	AA-17	Bollard
	AA-18	Dust control
	AA-19	Catch Basin Inlet Protection
	AA-20	Silt Sack
	AA-21	Turbidity Curtain
	AA-22	Siltsoxx Amphibian & Reptile Crossing #1
	AA-23	Siltsoxx Amphibian & Reptile Crossing #2
	AA-24	Siltsoxx Amphibian & Reptile Crossing #3
	AA-25	Cultural Avoidance

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SUBJECT

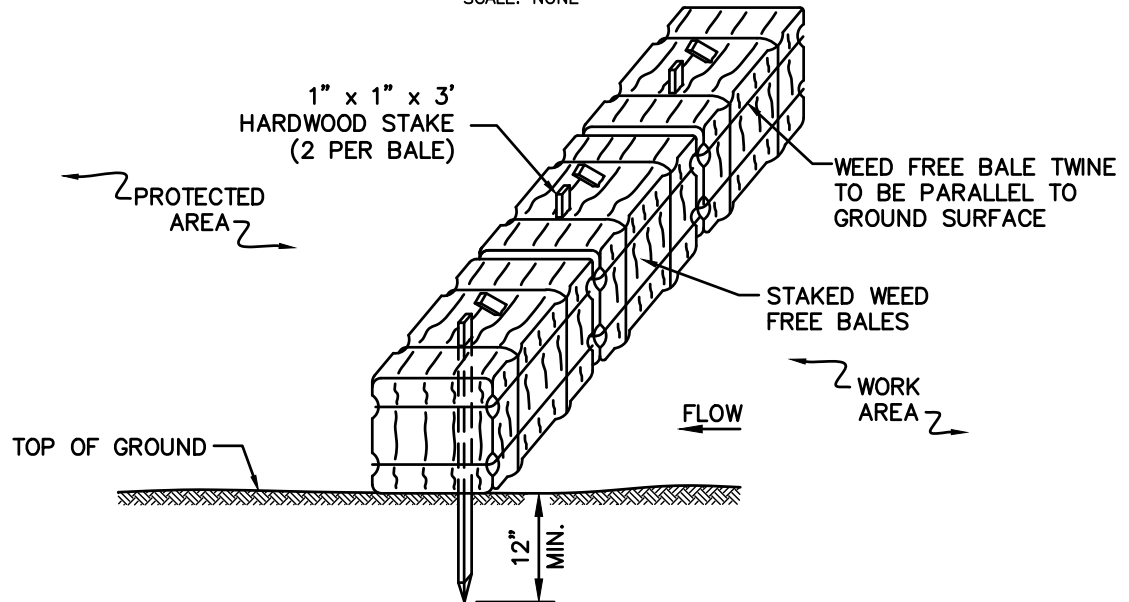
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. THE GROUND SHALL BE PREPARED TO PROVIDE COMPLETE CONTACT WITH THE BALES.

BMP PICTURE**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**

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SEC-1

WEED FREE BALE BARRIER

SUBJECT

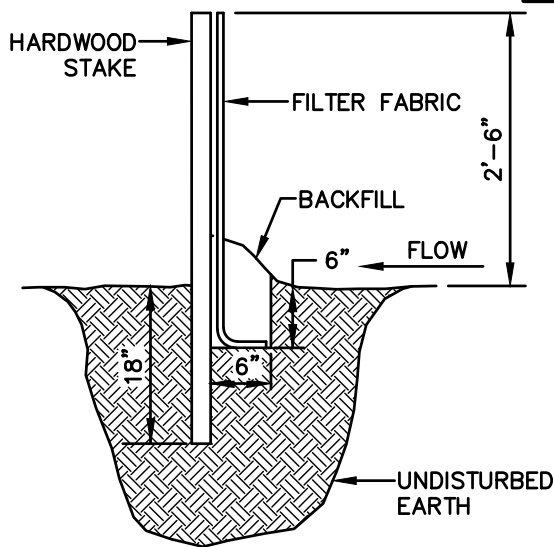
Access, Maintenance and Construction
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Reference

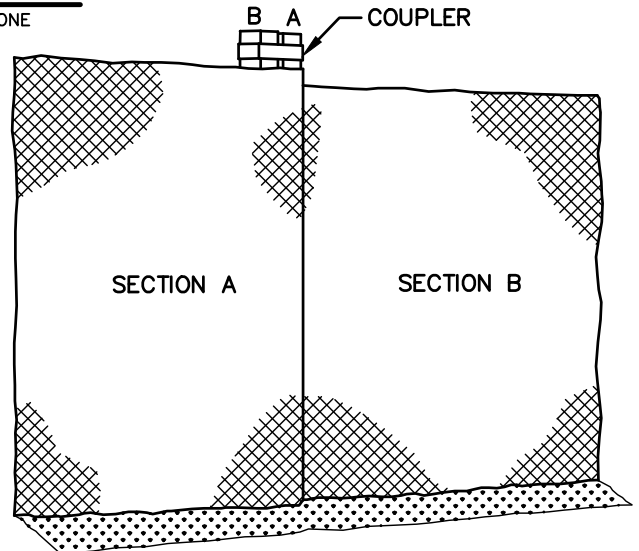
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

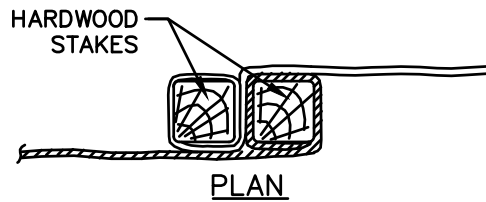
SCALE: NONE



PROFILE



SECTION



PLAN

BMP PICTURE



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SEC-2
SEDIMENT CONTROL FENCE

SUBJECT

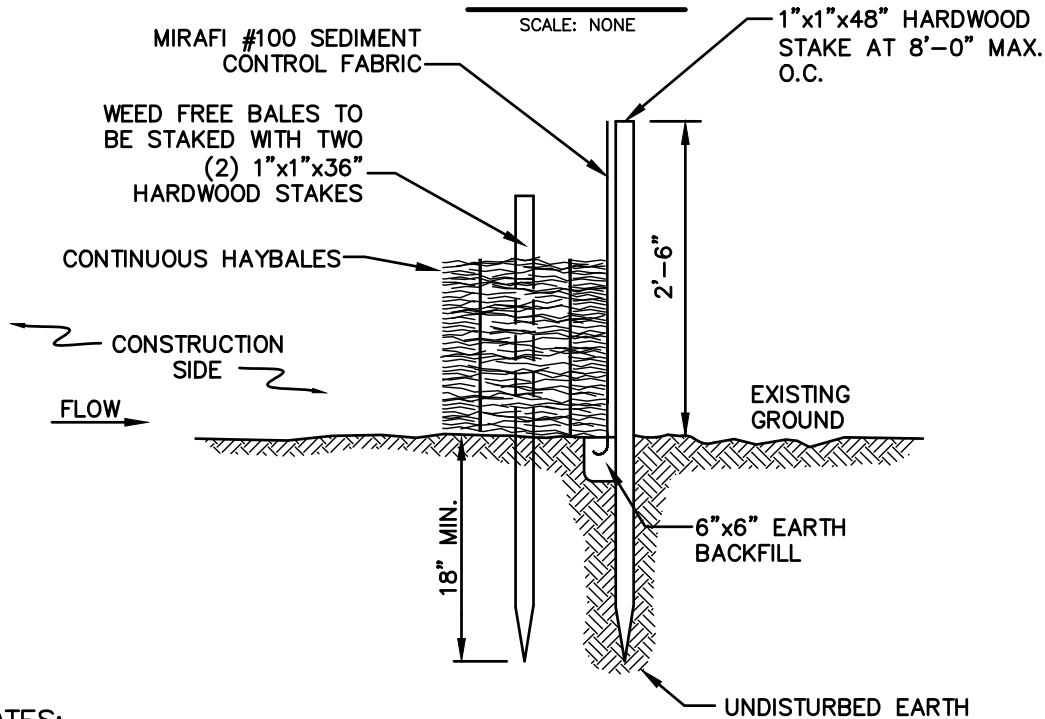
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. BALES SHALL BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. BALES SHALL BE SECURELY ANCHORED IN PLACE BY TWO (2) 1"x1"x36" HARDWOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. BALES SHALL BE REMOVED AND REPLACED WHEN THEY BECOME FILLED WITH SEDIMENT AND BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
5. BALES SHALL BE REMOVED WHEN THE EMBANKMENTS STABILIZE.
6. BALES TO BE TWINE BOUND.

BMP PICTURE

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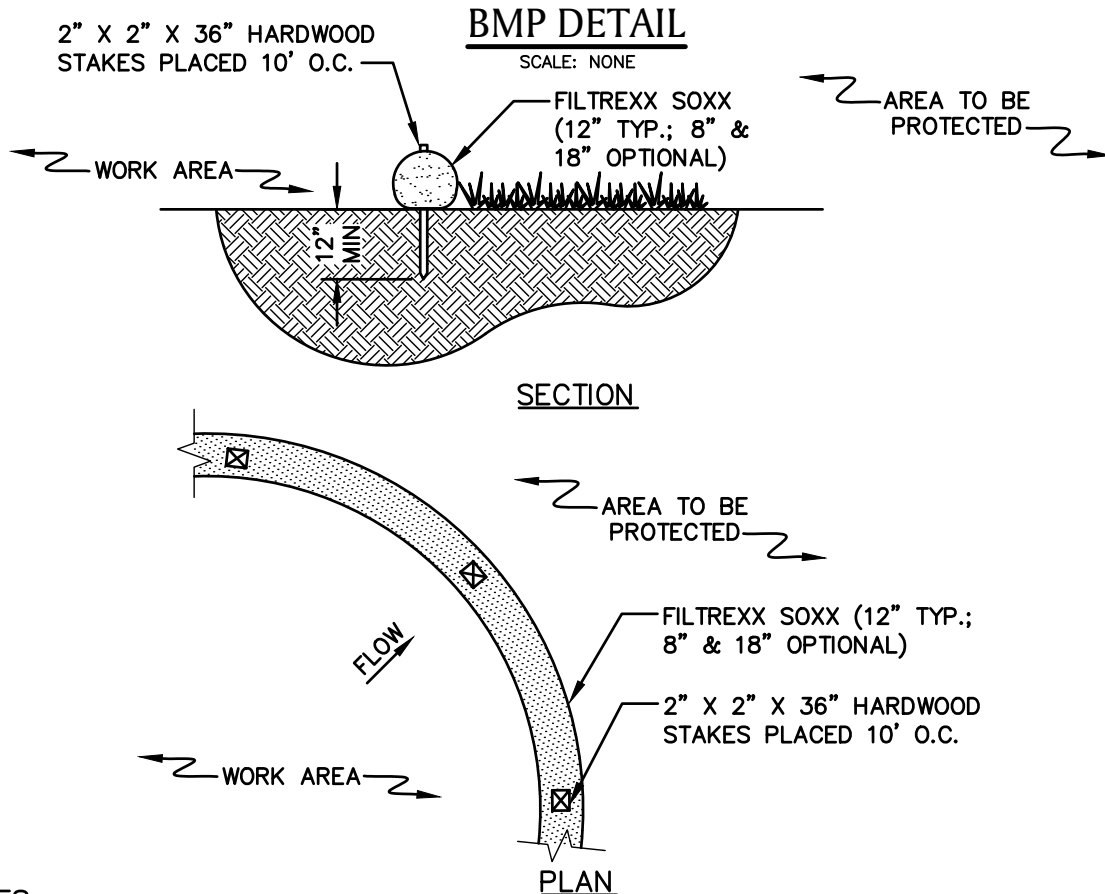
SEC-3
SILT FENCE /
WEED FREE BARRIER

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

NOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. MESH CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" – 3/8".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

* PICTURE AND DETAIL PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS
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SEC-4
SILT SOXX *

SUBJECT

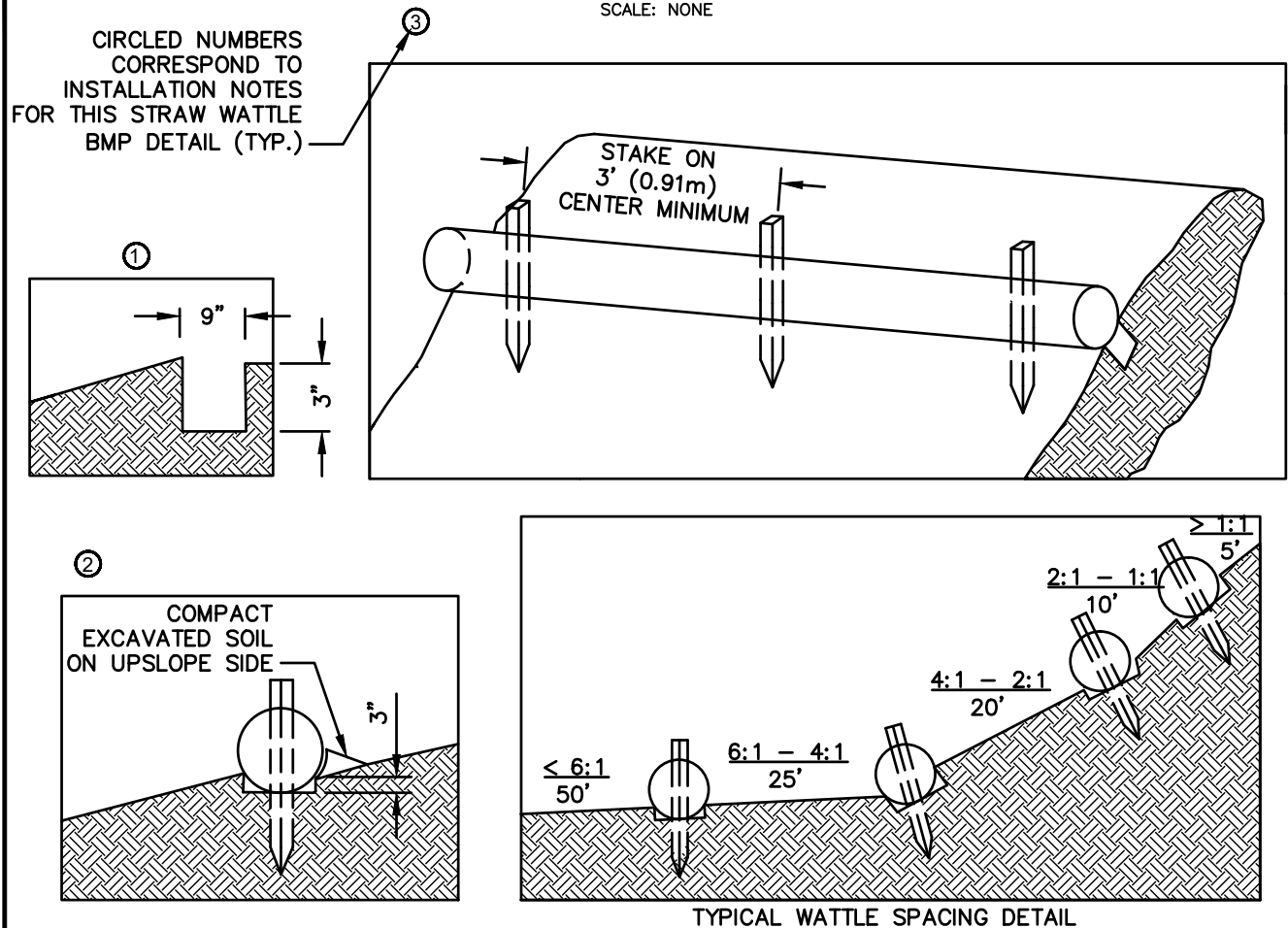
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. PRODUCT TO BE TENSAR NORTH AMERICAN GREEN STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. TYPICAL WATTLE SPACING BASED ON SLOPE GRADIENT. COORDINATE SPACING AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
3. MINIMUM 12" DIAMETER WATTLES SHOULD BE USED FOR HIGHLY DISTURBED AREAS (I.E., HEAVILY USED ACCESS ROAD WITH ADJACENT WETLAND) AND MINIMUM 9-10" WATTLES SHOULD BE USED FOR LESS DISTURBED SOILS.

INSTALLATION NOTES:

1. BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
3. SECURE THE WATTLE WITH 18-24" HARDWOOD STAKES EVERY 3-4' AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE WATTLE LEAVING AT LEAST 2-3" OF STAKE EXTENDING ABOVE THE WATTLE. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

* DETAIL AND PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN
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SEC-5
STRAW WATTLE * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

STRAW WATTLE – SHALLOW SLOPE ($\leq 4:1$)
(ALTERNATE STAKING)

ALTERNATE STAKING INSTALLATION NOTES:

1. ON SHALLOW SLOPES ($\leq 4:1$), STRAW WATTLE MAY BE SECURED WITH 18–24" HARDWOOD STAKES DRIVEN AGAINST THE SIDES OF THE WATTLE INSTEAD OF THROUGH. STAKES SHALL ALTERNATE SIDES, AND BE SPACED 3–4' MAX.
2. TWINE SHALL BE TIED FROM STAKE TO STAKE, CRISS-CROSSING THE STRAW WATTLE. TIE TWINE TO STAKES BELOW THE HEIGHT OF THE WATTLE.

SUBJECT

Access, Maintenance and Construction
Best Management Practices

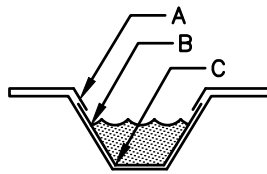
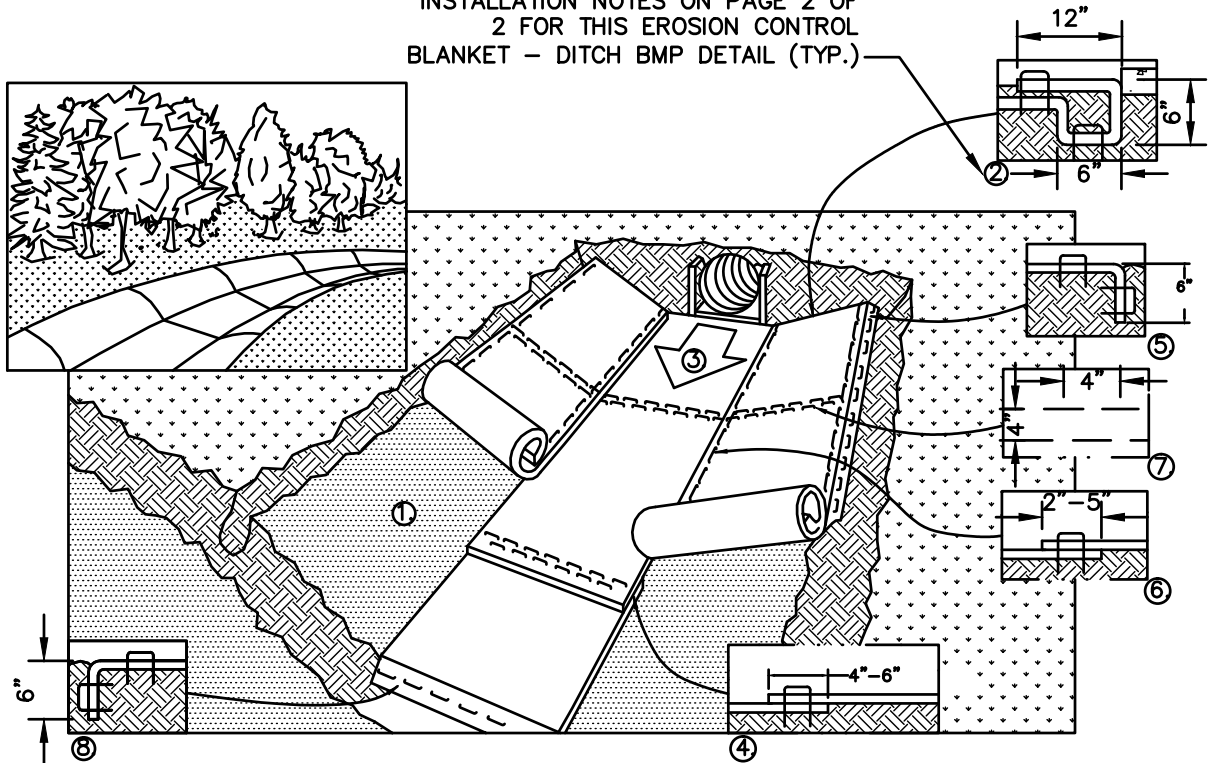
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

CIRCLED NUMBERS CORRESPOND TO
INSTALLATION NOTES ON PAGE 2 OF
2 FOR THIS EROSION CONTROL
BLANKET - DITCH BMP DETAIL (TYP.)

**CRITICAL POINTS**

- A. OVERLAPS AND SEAMS
- B. PROJECTED WATER LINE
- C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTES:

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
3. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE ROLLED EROSION CONTROL PRODUCTS (RECP's).

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SEC-6
EROSION CONTROL BLANKET -
DITCH * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**INSTALLATION NOTES:**

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" - 6" (10 CM -15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" - 5" (5 CM -12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M - 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

BMP PICTURE

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SEC-6
EROSION CONTROL BLANKET -
DITCH * (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

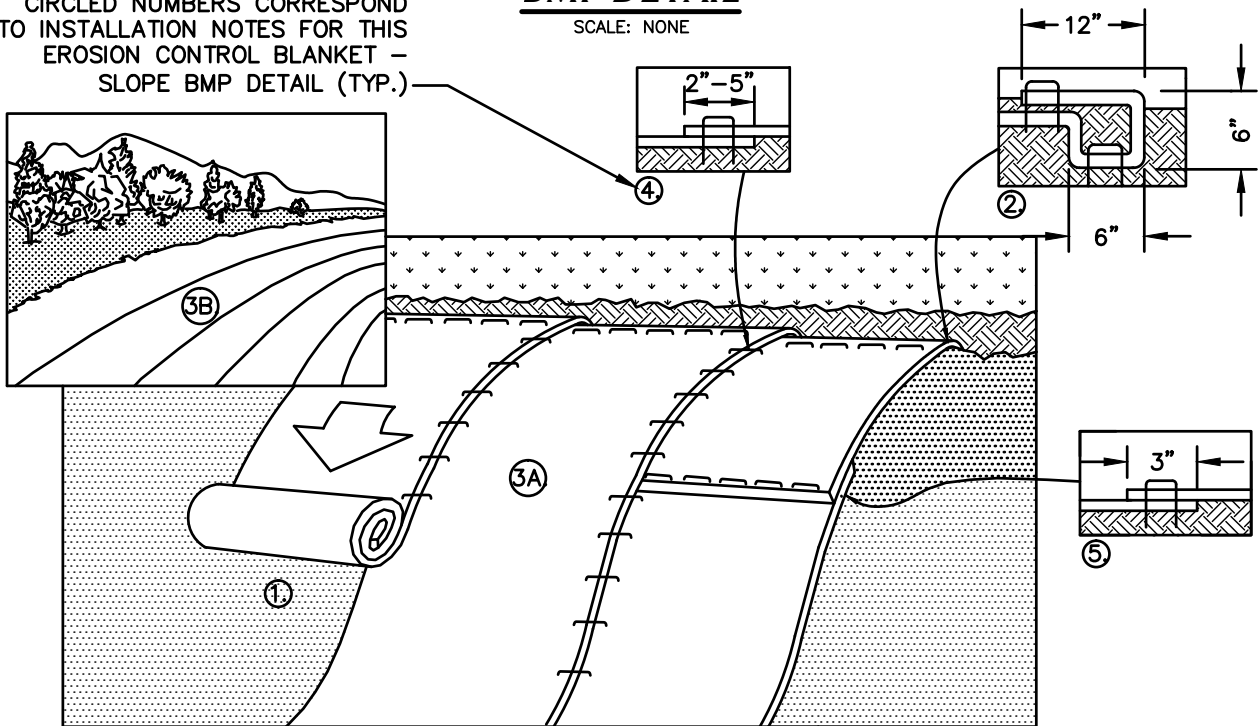
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

CIRCLED NUMBERS CORRESPOND
TO INSTALLATION NOTES FOR THIS
EROSION CONTROL BLANKET –
SLOPE BMP DETAIL (TYP.)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. PRODUCT TO BE NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

INSTALLATION NOTES:

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" – 5" (5 CM – 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.

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SEC-7
EROSION CONTROL BLANKET -
SLOPE * (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

File: Erosion_Blanket_Slope.dwg

* PICTURE AND DETAIL PROVIDED BY TENSAR NORTH AMERICAN GREEN
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SEC-7
EROSION CONTROL BLANKET -
SLOPE * (2 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURENOTES:

1. COORDINATE MIXTURE TYPE AND APPLICATION AREAS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.
2. A MINIMUM OF 1500 LBS. PER ACRE OF A PAPER/CORN FIBER OR EQUIVALENT WITH NATURAL TACKIFIERS WILL BE USED ON SLOPES LESS THAN 3:1.
3. A BFM (BONDED FIBER MATRIX) WILL BE USED ON SLOPES GREATER THAN 2:1.
4. A FGM (FLEXIBLE GROWTH MATRIX) OR ESM (EXTREME SLOPE MATRIX) WILL BE USED ON SLOPES GREATER THAN 1:1.
5. REFER TO BMP #10 FOR SEED MIXTURE OPTIONS.

* PICTURE PROVIDED BY TENSAR NORTH AMERICAN GREEN

* TACKIFIER INFORMATION PROVIDED BY FILTREXX LAND IMPROVEMENT SYSTEMS AND TENSAR NORTH AMERICAN GREEN

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SEC-8

HYDROSEEDING WITH TACKIFIER
(SLOPE STABILIZATION) *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP**Definition**

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface.

Purpose

The primary purpose is to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch is also used alone for temporary stabilization in non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedlings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

**NOTE:**

1. PICTURE DEPICTS STRAW MULCH APPLICATION (FROM MULCH SPREADER) ON STEEP SLOPE WITH AN IMPROVED DRAINAGE SWALE.
2. COORDINATE MULCH MATERIALS AND RATES WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: <http://www.dec.ny.gov/chemical/29086.html>
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SEC-9
MULCH MATERIALS, RATES AND
USES (FROM NY) *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

UPLAND ROW RESTORATION MIX – GENERALSpecies Composition Options:

- Andropogon gerardii; Niagra Big Bluestem
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Elymus virginicus; Virginia Wildrye
- Lolium multiflorum; Annual Ryegrass
- Sorghastrum nutans; Indiangrass
- Chamaecrista fasciculata; Partridge Pea
- Desmodium canadense; Showy Tick Trefoil
- Heliopsis helianthoides; Ox-Eye Sunflower
- Panicum virgatum; Switchgrass
- Rudbeckia hirta; Black Eyed Susan
- Poa palustris; Fowl Bluegrass
- Agrostis perennans; Upland Bentgrass
- Agrostis alba; Redtop
- Festuca rubra; Red Fescue
- Lotus corniculatus; Birds-Foot Trefoil
- Chrysanthemum leucanthem; Ox-Eye Daisy
- Aster novae-angliae; New England Aster

Example Seed Mixes:

1. Native Upland wildlife forage and Cover Meadow Mix – Ernst Conservation Seeds (ERNMX-123)
2. Eastern Ecotype Native Grass Mix– Ernst Conservation Seeds (ERNMX-177)
3. New England Native Warm Season Grass Mix – New England Wetland Plants, Inc.
4. New England Logging Road Mix – New England Wetland Plants, Inc.
5. Northeast Upland Wildflower/Restoration Erosion Mix – Southern Tier Consulting (STCMX-2)

UPLAND ROW RESTORATION MIX – DRY/ROCKY SITESSpecies Composition Options:

- Festuca rubra; Red Fescue
- Schizachyrium scoparium; Little Bluestem
- Elymus Canadensis; Canada Wild Rye
- Bouteloua gracilis; Blue Grama
- Lolium multiflorum; Annual Ryegrass
- Lolium perenne; Perennial Ryegrass
- Agrostis scabra; Rough Bentgrass
- Agrostis perennans; Upland Bentgrass
- Sorghastrum nutans; Indiangrass

Example Seed Mixes:

1. New England Erosion Control/ Restoration Mix for Dry Sites – New England Wetland Plants, Inc.
2. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

WETLAND ROW RESTORATION MIXSpecies Composition Options:

- Agrostis stolonifera; Creeping Bentgrass
- Poa trivialis; Rough Bluegrass
- Alopecurus arundinaceus; Creeping Meadow Foxtail
- Lolium multiflorum; Annual Ryegrass
- Festuca rubra; Creeping Red Fescue
- Elymus virginicus; Virginia Wildrye
- Schizachyrium scoparium; Little Bluestem
- Andropogon gerardii; Niagra Big Bluestem
- Carex vulpinoidea; Fox sedge
- Panicum virgatum; Switchgrass
- Agrostis scabra; Rough Bentgrass
- Aster novae-angliae; New England Aster
- Eupatorium perfoliatum; Boneset
- Euthamia graminifolia; Grass Leaved Goldenrod
- Scirpus atrovirens; Green Bulrush
- Verbena hastata; Blue Vervain
- Juncus effusus; Soft Rush
- Scirpus cyperinus; Wool Grass
- Panicum clandestinum; Deertongue

Example Seed Mixes

1. New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites – New England Wetland Plants, Inc.
2. Northeast Wetland Grass Seed Mix – Southern Tier Consulting (STCMX-7)
3. Ernst Conservation Seeds and similar companies can create a custom seed mix matching the composition above (with site specific additions if necessary).

GERNERAL NOTES:

1. Seed mixes described herein are intended to cover a variety of typical new england landscapes. However, site specific seed mixes will need to be evaluated in coastal or mountainous regions.
2. Seed mixes described herein are intended for general ROW restoration. Site specific wetland seed mixes may be required by local, state and/or federal regulators for certain impacts to wetlands.
3. All seed mixes are to be approved by National Grid Environmental Scientist prior to construction and must conform with all project permits.
4. Seedbed preparation and maintenance as well as temporary erosion and sediment controls are crucial to the establishment of newly seeded areas. Coordinate with National Grid Environmental Scientist on seed bed preparation and maintenance as well as temporary erosion and sediment controls prior to construction.

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SEC-11

SEEDING OPTIONS -
WETLAND SEED MIX

SUBJECT

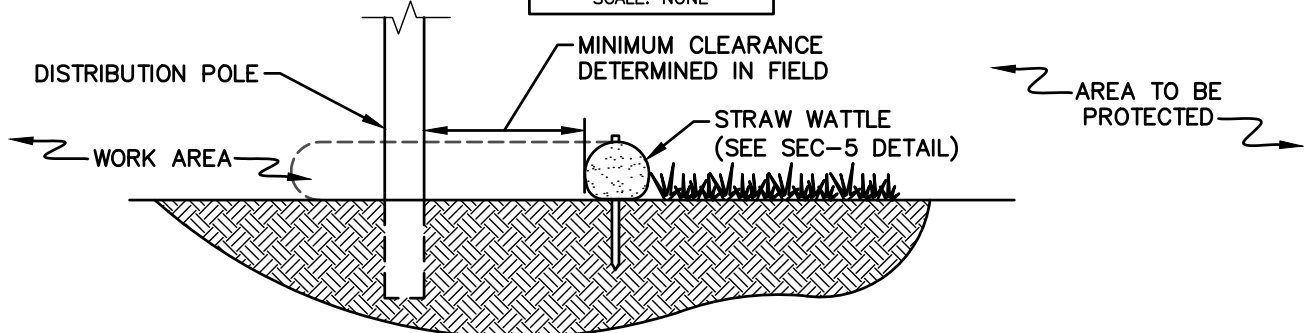
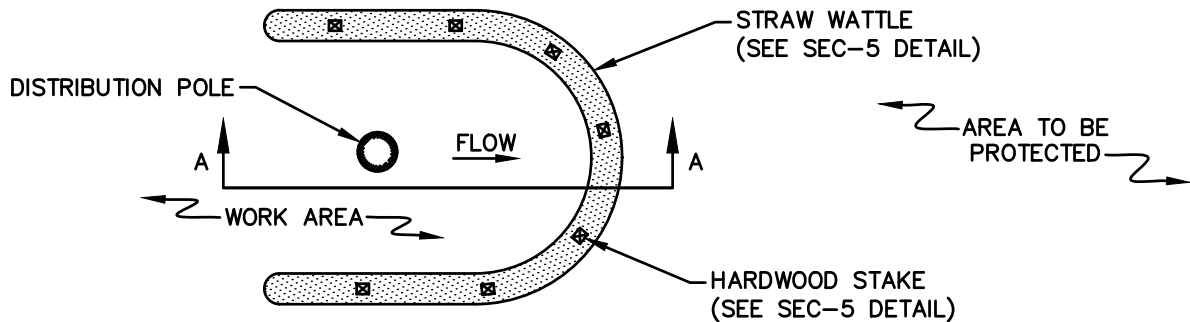
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

SECTION A-APLANNOTES

1. PRODUCT TO BE STRAW WATTLE OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE SEC-5 BMP DETAIL).
2. STRAW BALE BARRIER PER SEC-1 BMP DETAIL TO BE AN AVAILABLE ALTERNATE DEPENDING ON SITE CONDITIONS AT THE DIRECTION OF NATIONAL GRID ENVIRONMENTAL SCIENTIST (SEE FIGURE 2).
3. MINIMUM CLEARANCE BETWEEN POLE AND EROSION CONTROL TO BE DETERMINED BY CONDITIONS OF POLE INSTALLATION/REPLACEMENT WORK AND ASSOCIATED DISTURBANCE.

BMP PICTURE

FIGURE 1: TYP. STRAW WATTLE APPLICATION



FIGURE 2: ALT. STRAW BALE APPLICATION

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SEC-12
**DISTRIBUTION POLE
SEDIMENT CONTROL**

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

SCALE: NONE

**NOTES:**

1. PRODUCT TO BE ALTURNAMATS' PREFABRICATED MATS OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. PRODUCT AVAILABLE IN 4X8' UNITS.
3. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

* PICTURE PROVIDED BY ALTURNAMATS

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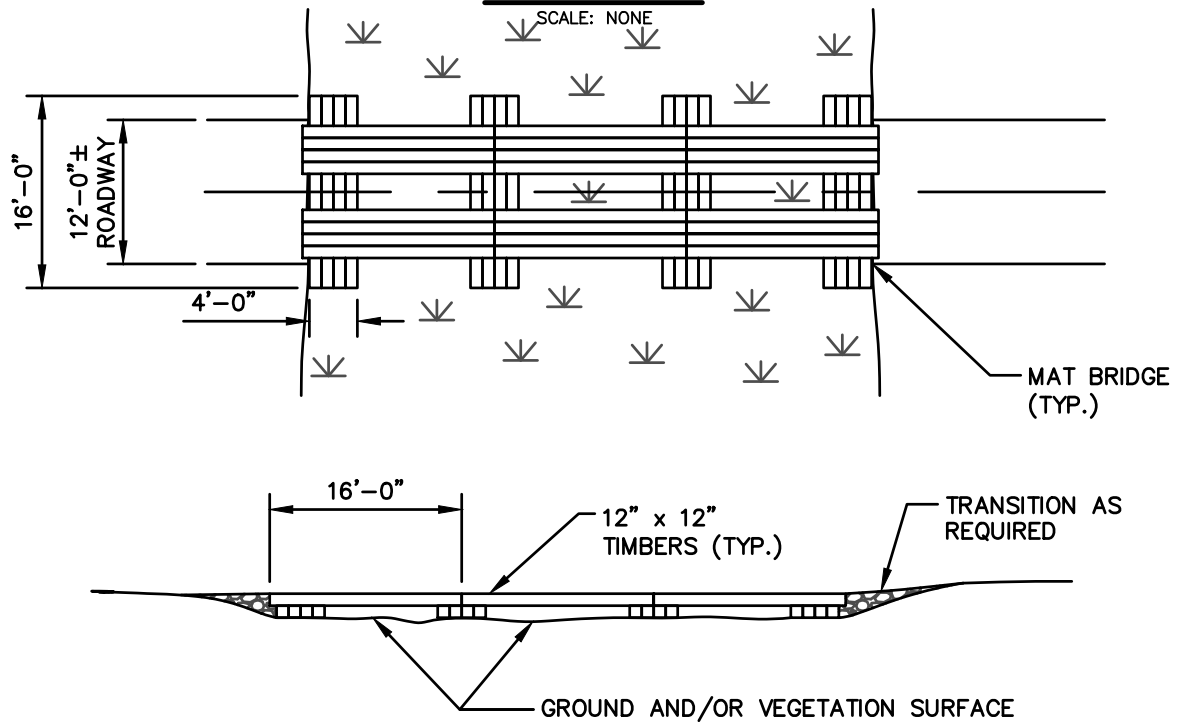
CM-1
PREFABRICATED MATS *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**NOTES:**

1. IF MATS ARE INSTALLED IN A WETLAND AREA, INSTALL EROSION CONTROLS TO CONTAIN MATERIAL UTILIZED IN THE MAT TRANSITIONS.

BMP PICTURE

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CM-2
CONSTRUCTION MAT BRIDGE
(1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE - SINGLE SPAN

SCALE: NONE

**NOTES:**

1. WHERE STREAM WIDTH ALLOWS, INSTALL CONSTRUCTION MATS TO SPAN THE WATERCOURSE IN ITS ENTIRETY WITHOUT STRINGER PLACEMENT IN THE WATER OR ANY RESTRICTION OF STREAM FLOW.
2. INSTALLATION OF THE CONSTRUCTION MAT BRIDGE SHALL NOT DAMAGE THE STREAM BED AND BANKS. WHERE POSSIBLE, FOOTERS SHALL BE PLACED PARALLEL TO THE TOP OF THE STREAM BANKS, WITH ACCESS MATTING PLACED ACROSS THE TOP OF THE STRINGERS DISTRIBUTING THE WEIGHT OF THE CONSTRUCTION EQUIPMENT.
3. AT STREAM CROSSINGS THAT CANNOT BE SPANNED BY A SINGLE SECTION OF CONSTRUCTION MATTING, AND WHERE PERMITS ALLOW, STRINGERS SHALL BE PLACED ATOP THE STREAM BED PARALLEL TO THE FLOW OF WATER.

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CM-2

CONSTRUCTION MAT BRIDGE
(2 OF 2)

SUBJECT

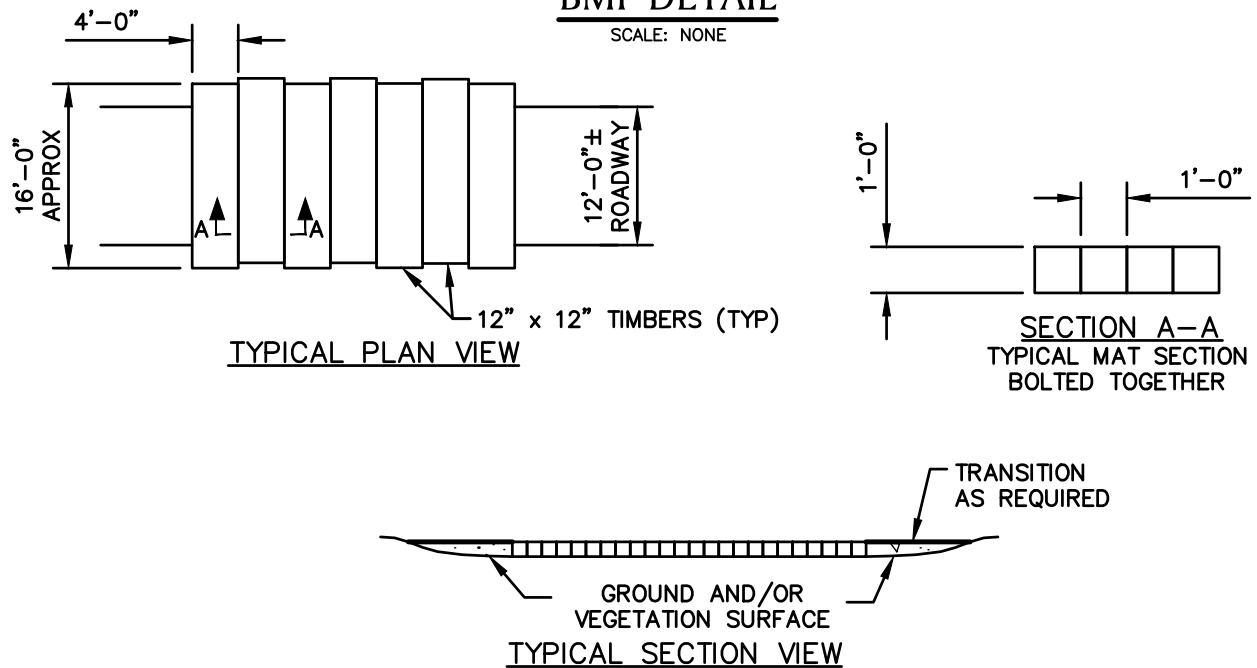
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. TO BE INSTALLED IF NECESSARY TO PREVENT RUTTING, TO ACCESS STRUCTURES.
2. THIS DETAIL SHOWS TYPICAL DIMENSIONS. SOME CONTRACTOR'S CONSTRUCTION MATS ARE DIMENSIONALLY DIFFERENT FROM WHAT IS SHOWN HERE.
3. DEPENDENT ON SITE CONDITIONS, MULTIPLE LAYERS OF CONSTRUCTION MATS MAY BE INSTALLED.

BMP PICTURE**CM-3**

CONSTRUCTION MAT LAYOUT
(WITH TRANSITION)

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SUBJECT

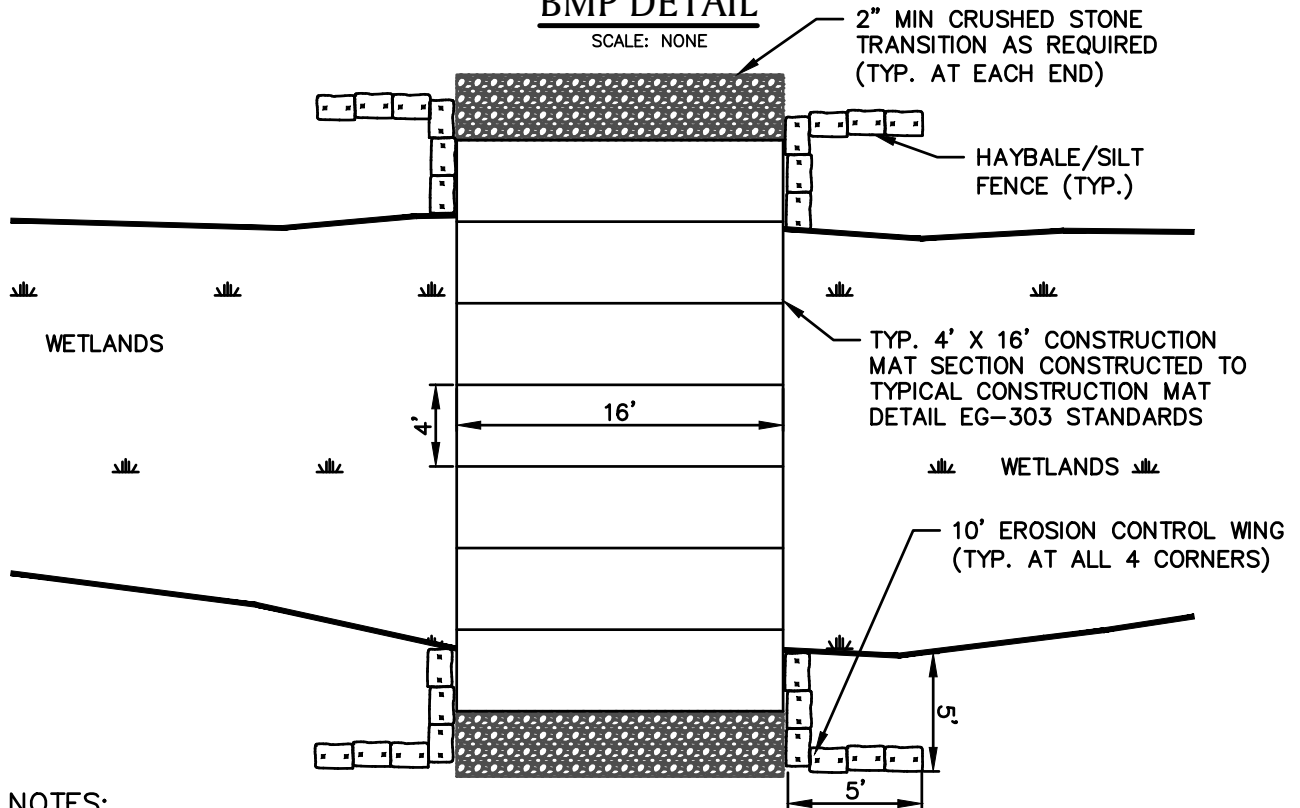
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. ADD FILTER FABRIC AS NEEDED UNDER STONE TRANSITION RAMPS.
2. ALL MEASUREMENTS AND LOCATIONS ARE APPROXIMATE.

BMP PICTURE

CM-4

CONSTRUCTION MAT LAYOUT
(WITH TRANSITION AND BMPs)

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SUBJECT

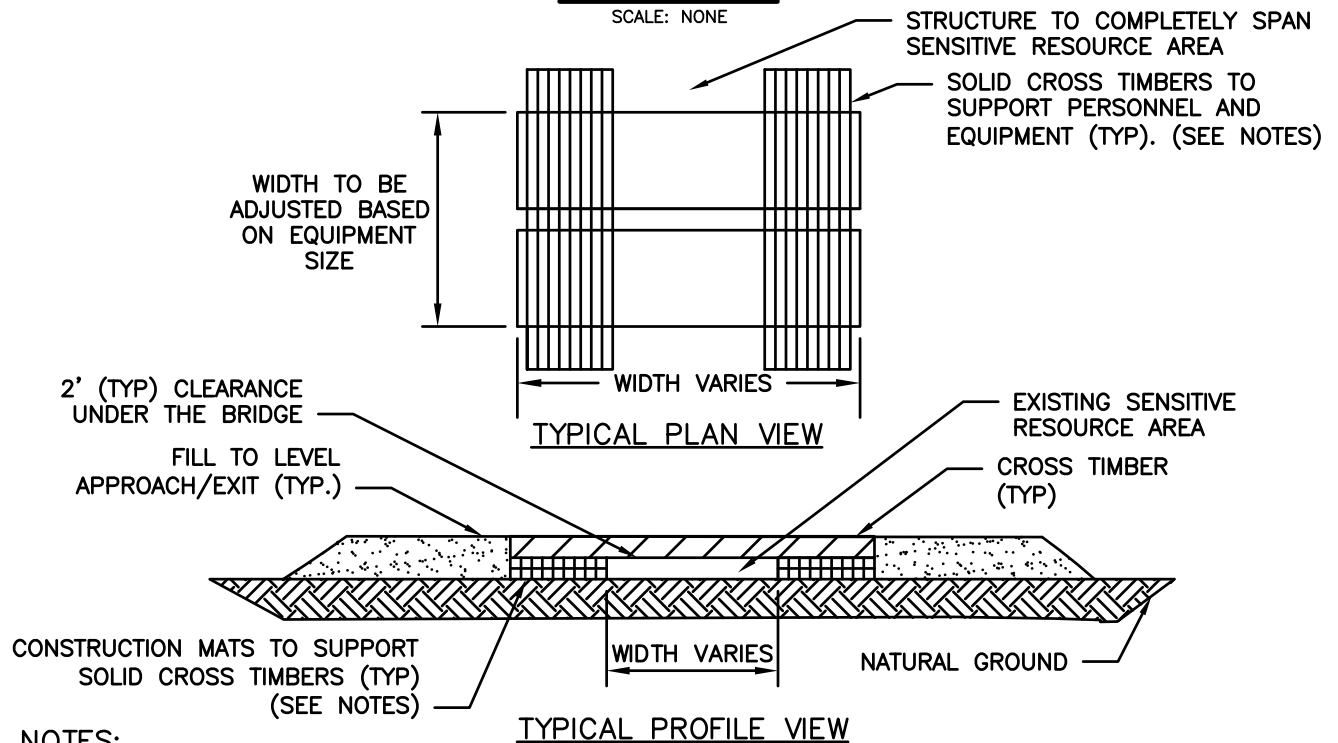
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. THE DETAIL SHOWN IS CONCEPTUAL. CONSTRUCTION MATS AND CROSS TIMBERS SHALL BE SIZED AND SELECTED BASED ON SPAN WIDTH, CROSSING EQUIPMENT AND FIELD CONDITIONS.
2. THE NUMBER OF CONSTRUCTION MATS MAY VARY DEPENDING ON THE CLEARANCE HEIGHT.
3. EQUIPMENT AND PERSONNEL LOAD SHALL BE DISTRIBUTED ON ALL TIMBERS.
4. EACH EQUIPMENT OPERATOR AND USER OF THE FIELD BRIDGE SHALL BE FAMILIAR WITH THE DESIGN AND THE MAXIMUM EQUIPMENT AND PERSONNEL LOADS.
5. THIS DETAIL MAY NOT BE APPLICABLE IN ALL FIELD CONDITIONS.
6. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

BMP PICTURE

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CM-5

CONSTRUCTION MAT - AIR BRIDGE

SUBJECT

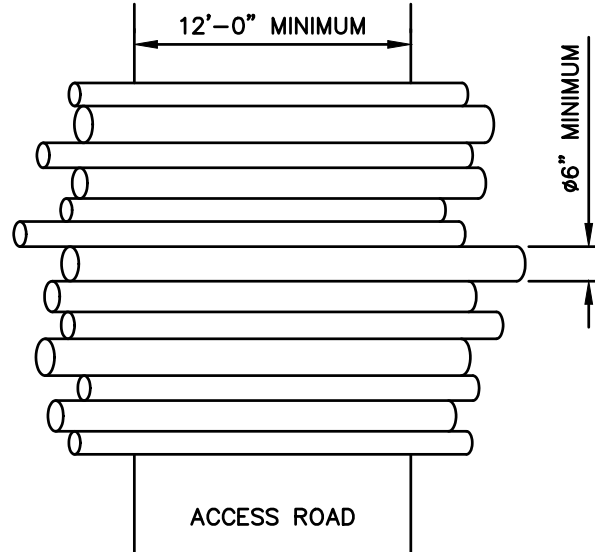
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



RANDOM LENGTH AND DIAMETER LOGS PLACED ACROSS AN ACCESS ROAD

NOTE:

1. A SIMILAR BRUSH MAT INSTALLATION CONSISTING OF SMALLER DIAMETER STEMS AND LOGS CAN BE USED.
2. CORDUROY ROADS SHALL ONLY BE USED IN EMERGENCIES OR AFTER APPROVAL FROM THE PROJECT ENVIRONMENTAL CONSULTANT OR NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

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CM-6
CORDUROY ROAD

SUBJECT

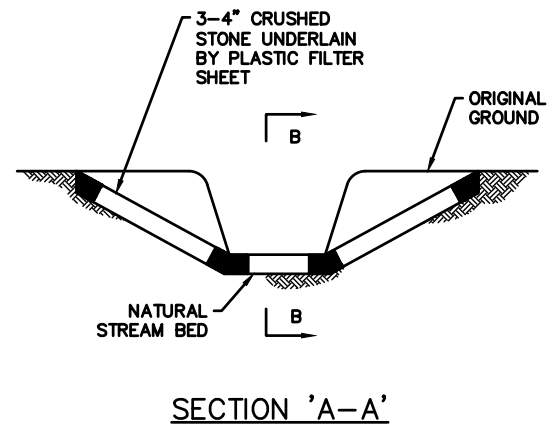
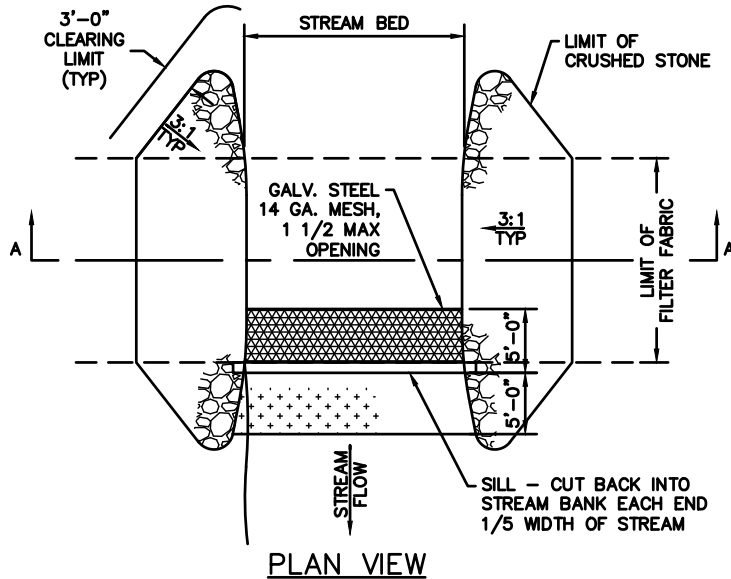
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BMP DETAIL

SCALE: NONE

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CM-7
ROCK FORD

SUBJECT

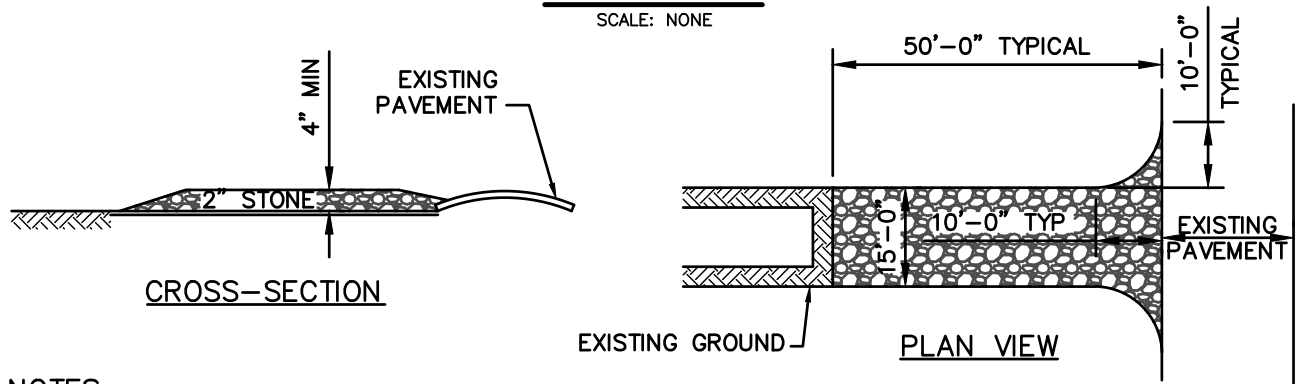
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. STONE SIZE – USE 2" STONE (MINIMUM) TO 6" STONE (MAXIMUM)
2. LENGTH – GREATER THAN OR EQUAL TO 50 FEET
3. THICKNESS – 4"
4. WIDTH – FIFTEEN (15) FOOT TYP., BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS ENTRANCE. IF PIPING IS IMPRACTICAL, MOUNTABLE BERM SHALL BE PERMITTED.
6. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
7. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED.
8. THE CLEAN STONE SHOULD BE INSTALLED OVER A GEOTEXTILE FABRIC. GEOTEXTILE FABRIC MAY BE OMITTED FOR PERMANENT CONSTRUCTION ENTRANCES/EXITS ON A CASE-BY-CASE BASIS WITH THE APPROVAL OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
9. FOLLOWING CONSTRUCTION, THE CONSTRUCTION ENTRANCE/EXIT SHALL BE REMOVED AND THE AREA GRADED, SEEDED, AND MULCHED AS NEEDED. ENTRANCE/EXITS MAY REMAIN DEPENDING UPON FUTURE ACCESS NEEDS AND/OR PROJECT-SPECIFIC APPROVALS BUT REQUIRES APPROVALS FROM THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND PROPERTY LEGAL.

BMP PICTURE

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CM-8
TEMPORARY CONSTRUCTION
ENTRANCE/ EXIT

SUBJECT

Access, Maintenance and Construction
Best Management Practices

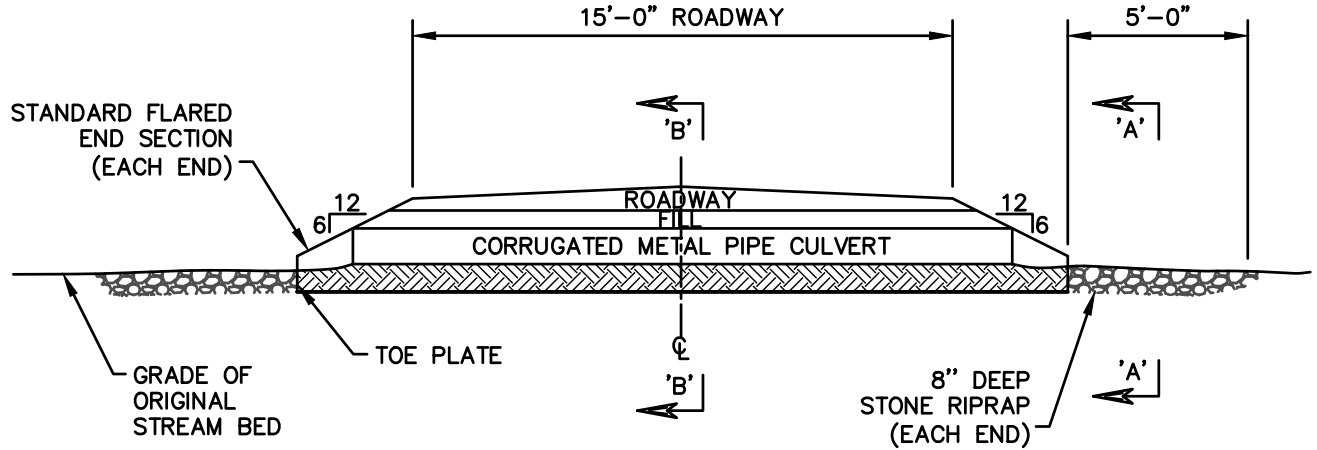
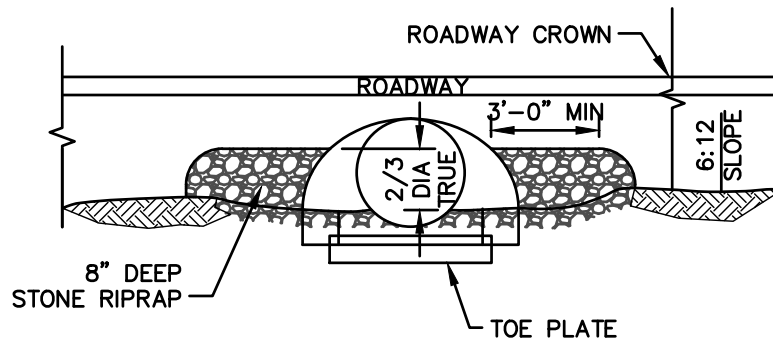
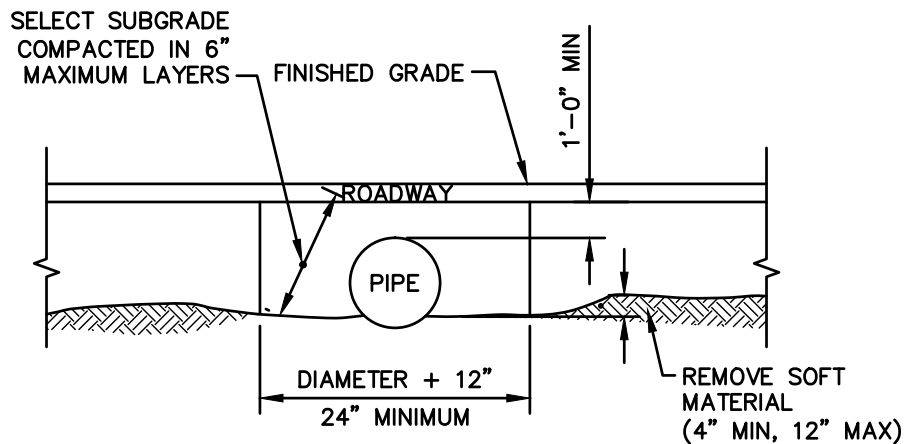
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

15'-0" ROADWAY

**CROSS SECTION****SECTION 'A-A'**
(SAME BOTH ENDS)**SECTION 'B-B'**

CM-9
TEMPORARY CONSTRUCTION
CULVERT (1 OF 2)

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SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**NOTES:**

SCALE: NONE

1. CULVERT DESIGN AND LAYOUT SHALL BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST (NGES).
2. CROWN ROADWAY 1/2 INCH PER FOOT.
3. LAY THE CULVERT STRAIGHT AND AS NEARLY AS POSSIBLE ALONG THE EXISTING STREAM BED AND WITH THE INVERTS AT OR SLIGHTLY BELOW BED ELEVATION.
4. CORRUGATED METAL PIPE IS TO BE GALVANIZED STEEL, OR ALUMINIZED STEEL (TYPE 2), WITH BOLTED CONNECTORS.
5. DIAMETERS SHALL BE AS PER THE PROJECT DRAWINGS AND THE SPECIFICATION. THE PIPE GAGE SHALL BE AS FOLLOWS:

DIAMETER (INCHES)	GAGE
12" - 15"	.004"
18" - 24"	.079"
30" - 36"	.109"

6. INSTALLATION OF CULVERTS LARGER THAN 36 INCH DIAMETER SHALL REQUIRE SPECIAL ENGINEERING DESIGN.
7. SELECT SUBGRADE SHALL BE A GRANULAR MATERIAL AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203-2.02C, OR AS APPROVED BY A NGES.
8. STONE RIPRAP SHALL BE AS DESCRIBED IN NYSDOT SPECIFICATION ITEM 203-2.02D, WITH 8 INCH MAXIMUM SIZE, OR AS APPROVED BY A NGES. EXCEPT WHERE PROTECTED BY STONE, ALL EMBANKMENT SLOPES ARE TO BE STABILIZED, MULCHED AND SEEDED AS PER PROJECT SPECIFICATIONS.
9. OUTLET SHOULD BE CONFIGURED NOT TO CREATE HYDRAULIC JUMP OR PLUNGE POOL.
10. INSTALL EROSION CONTROLS ADJACENT TO THE CULVERT ENDS TO PROTECT THE WATERWAY FROM ROADWAY DEBRIS.

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CM-9

**TEMPORARY CONSTRUCTION
CULVERT (2 OF 2)**

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURENOTE:

1. PICTURE SHOWS VIEW OF ACCESS WAY STABILIZATION ADJACENT TO A WETLAND.
2. COORDINATE STABILIZATION DESIGN AND PRODUCT WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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CM-10

ACCESS WAY STABILIZATION

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

NO ACCESS – WETLAND/STREAM CROSSING MATS REQUIRED



NO ACCESS – A.) PROJECT LIMITS E.G. ROW LIMITS
B.) HISTORICAL/CULTURAL
C.) ENVIRONMENTALLY SENSITIVE E.G. THREATENED & ENDANGERED
D.) OTHER



APPROVED ACCESS

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CM-11
CONSTRUCTION SIGNAGE

SUBJECT

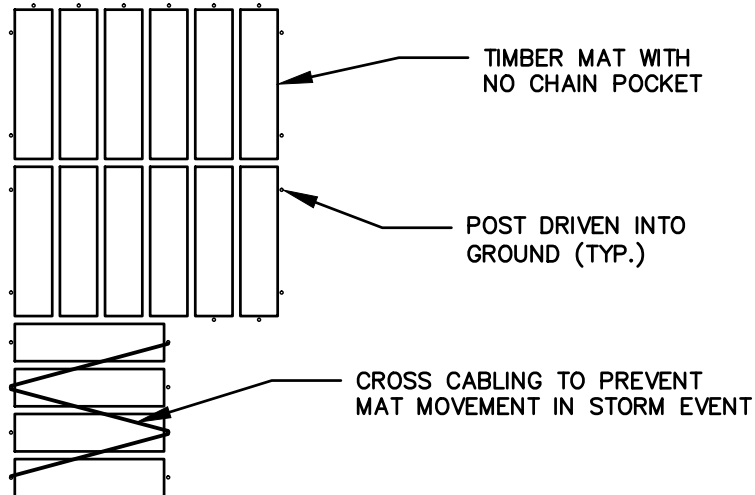
Access, Maintenance and Construction
Best Management Practices

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EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL 1

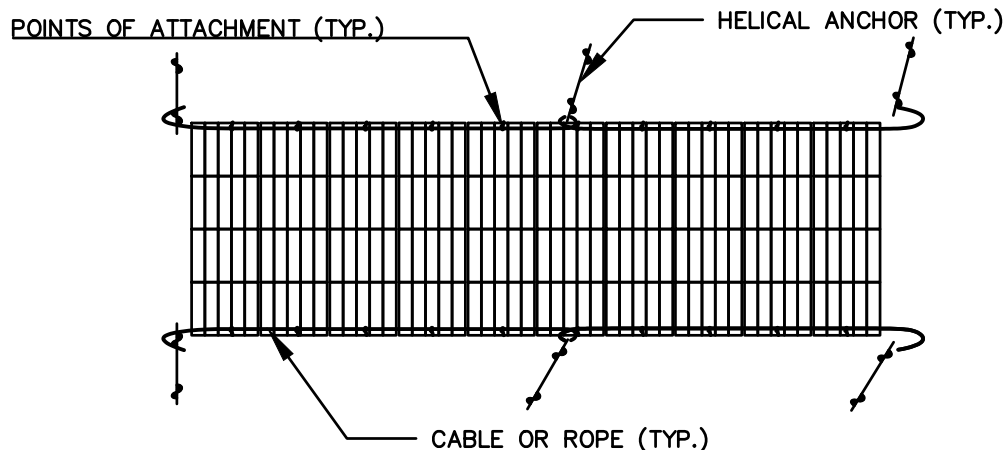
SCALE: NONE

TYPICAL PLAN VIEWNOTES:

1. EXAMPLES OF ANCHORING ONLY. MATTING CONTRACTOR SHALL PROPOSE THE METHOD OF ANCHORING BASED ON FIELD CONDITIONS.
2. ANCHORING METHOD TO BE APPROVED BY THE NATIONAL GRID ENVIRONMENTAL SCIENTIST AND TRANSMISSION LINE CONSTRUCTION SUPERVISOR.

BMP DETAIL 2NOTES:

1. TYPICAL HELICAL ANCHOR AND CABLE CONFIGURATION FOR MAT CONTAINMENT IN FLOODPLAINS/LAND SUBJECT TO FLOODING.
2. TYPICAL POINTS OF ATTACHMENT HEAVY STAPLES, EYE BOLTS OR OTHER SUITABLE HARDWARE TO SECURE ATTACHMENT OF MAT TO LINEAR CABLE. IF CHAIN POCKETS ARE PRESENT IN THE MATS CABLE OR ROPE CAN BE LOOPED THROUGH RODS.

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CM-12

EXAMPLE OF CONSTRUCTION MAT
ANCHORING (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE 1



BMP PICTURE 2



CM-12

**EXAMPLE OF CONSTRUCTION MAT
ANCHORING (2 OF 2)**

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SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

WIRE BACKED SILT FENCE

**MUTUAL INDUSTRIES WIRE BACKED SILT FENCE**

PART # 1776-14-24

36" X 100'

36" MISF 1776 FABRIC

24" 14GA WIRE MESH

OPENING OF MESH 2" X 4"

FABRIC HOG RINGED EVERY 12"-18" ALONG THE TOP OF THE FENCE

ROLL WEIGHT 40 LBS

32 ROLLS PER PALLET

NOTES:

1. PRODUCT TO BE MUTUAL INDUSTRIES' WIRE BACKED SILT FENCE OR APPROVED EQUAL BY NATIONAL ENVIRONMENTAL SCIENTIST.
2. COORDINATE INSTALLATION METHOD AND LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

* PICTURE AND DETAIL PROVIDED BY MUTUAL INDUSTRIES

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AA-1

REINFORCED SILT FENCE *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURENOTE:

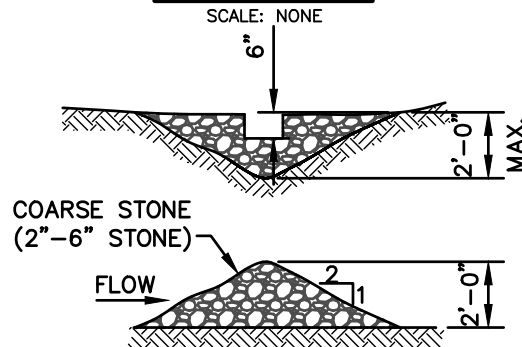
1. PICTURE SHOWS SEDIMENT FILTER WITHIN A WETLAND.

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**STONE CHECK DAM****NOTES:**

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. THE CENTER OF THE CHECK DAM MUST BE AT LEAST 6" LOWER THAN THE OUTER EDGES.
4. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
5. MAX. SPACING: TOE OF THE UPSTREAM DAM IS SAME ELEVATION AS TOP OF DOWNSTREAM DAM.
6. STONE SHALL BE FREE OF FINE PARTICLES TO PREVENT TURBID DISCHARGES.

BMP PICTURE

NOTE: A SMALLER STONE SIZE IS SHOWN IN THIS PICTURE.

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AA-3
STONE CHECK DAMS

SUBJECT

Access, Maintenance and Construction
Best Management Practices

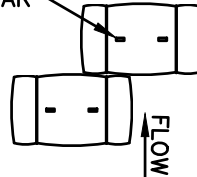
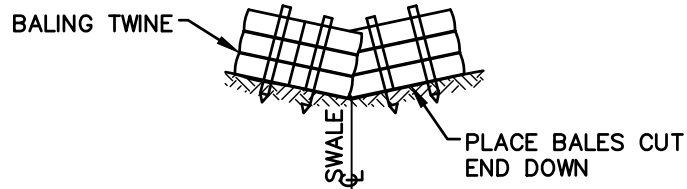
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

3' HARDWOOD
STAKES OR
Ø5/8" REBAR

PLAN VIEWSECTION VIEWNOTES:

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE**APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**

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AA-4

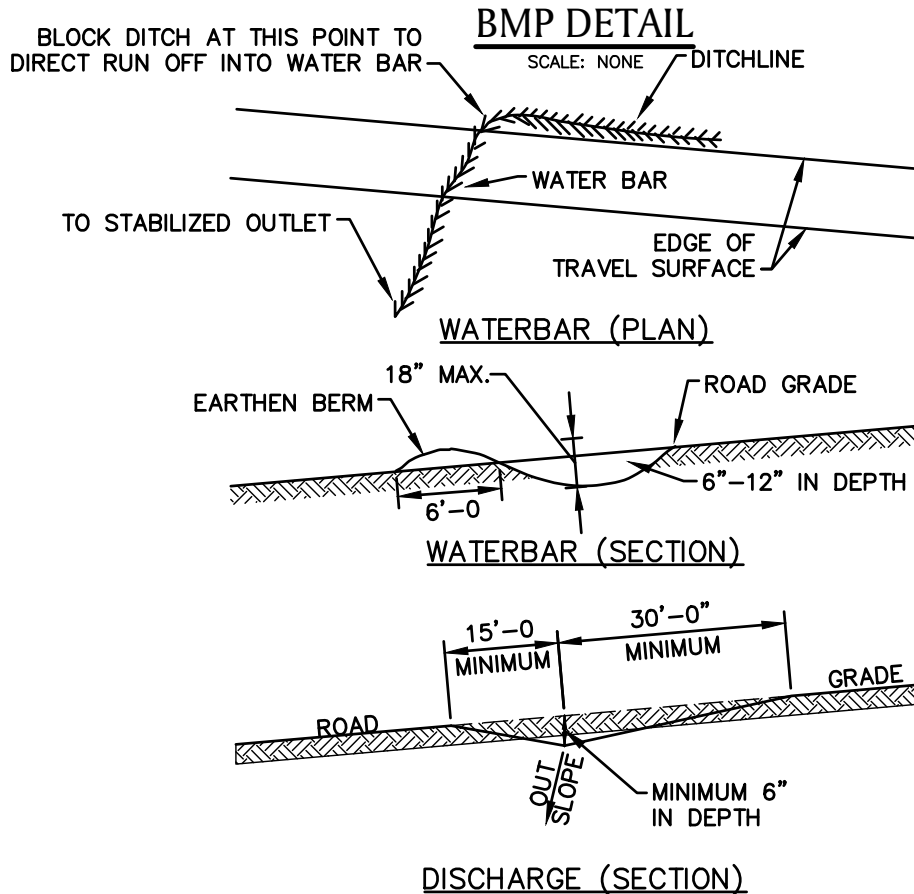
STRAW / HAYBALE CHECK DAM

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

**NOTE:**

1. LINE WITH 2"-6" STONE UNDERLAIN BY GEOTEXTILE FILTER FABRIC, KEYED INTO ROAD SURFACE AT LEAST 10 FEET EACH SIDE OF WATERBAR.
2. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE

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AA-5
WATERBAR

SUBJECT

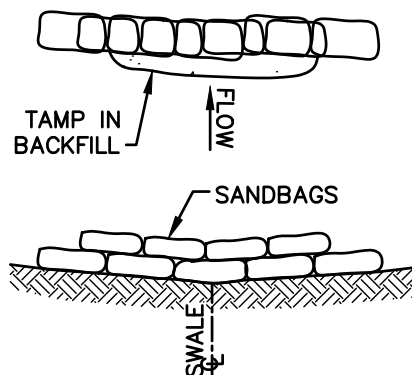
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**SANDBAG
CHECK DAM****NOTES:**

1. USE CHECK DAMS TO SLOW WATER FLOWS AND AS SMALL SEDIMENT TRAPS IN DITCHES ALONG ACCESS ROADS.
2. CLEAN SEDIMENT AND REPLACE DAMS AS NECESSARY.
3. COORDINATE SPACING WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

BMP PICTURE**NOTE:**

1. PICTURE DOES NOT DEPICT "TAMP IN BACKFILL"

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AA-6
SANDBAG CHECK DAM

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURENOTE:

1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

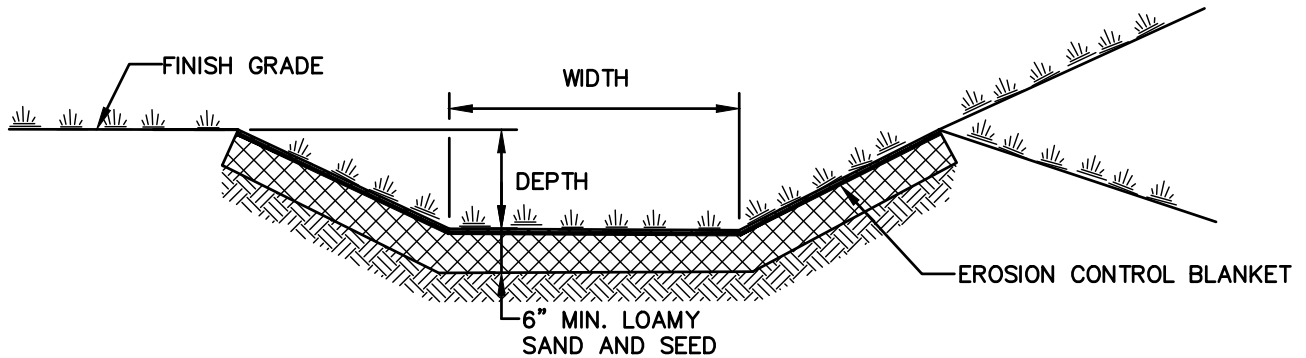
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AA-7
EARTH DIKE

SUBJECTAccess, Maintenance and Construction
Best Management Practices**Reference**EP No. 3 - Natural Resource
Protection (Chapter 6)**BMP DETAIL**

SCALE: NONE

**NOTES:**

1. WIDTH AND DEPTH OF SWALE, AND EROSION CONTROL BLANKET TYPE TO BE COORDINATED WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. REFER TO DETAILS SEC-10 AND SEC-11 FOR SEED MIXTURE OPTIONS.

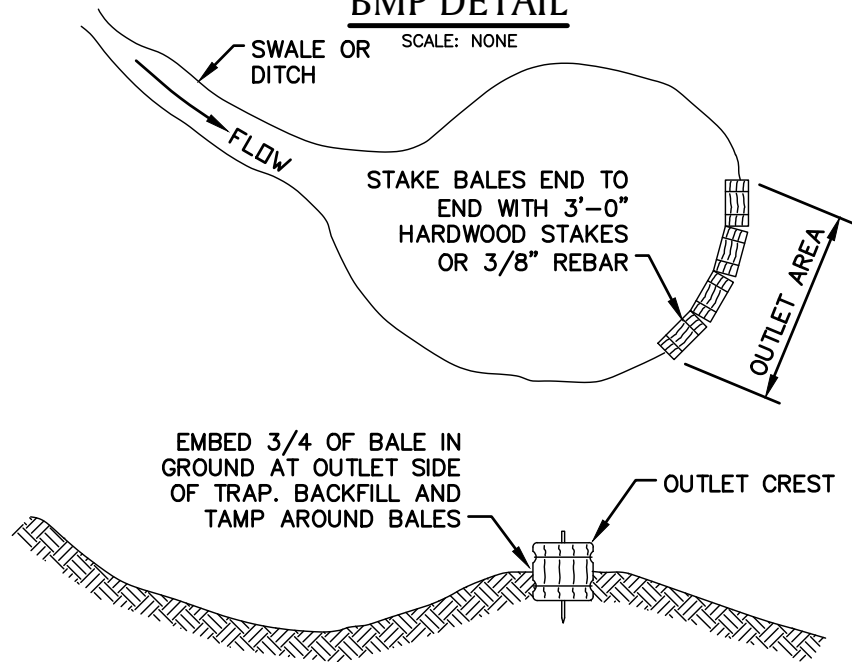
BMP PICTURE**AA-8****DRAINAGE SWALE AND
LINED DITCH****APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES**PRINTED COPIES ARE NOT DOCUMENT CONTROLLED. FOR LATEST AUTHORIZED
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SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**TYPICAL PROFILE****NOTES**

1. SIZE, SHAPE AND PROFILE OF SEDIMENT WILL VARY ACCORDING TO ANTICIPATED FLOW VOLUME AND SURROUNDING TERRAIN AND SHALL BE COORDIANATED WITH THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE BASIN SHALL BE CUT BELOW THE GROUNDLINE. FILL SHALL NOT BE USED TO HOLD WATER UNLESS ROLLED AND COMPACTED.
3. OUTLET AREA IS TO REMAIN FREE OF EXCAVATION SPOILS.
4. OUTLET CREST ELEVATION SHALL BE LOWER THAN INLET ELEVATION AND AT LEAST 1'-0" BELOW THE TOP OF THE BASIN. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.
5. ARMOUR SLOPES >8% IN OUTLET AREA WITH STONE OF APPROPRIATE SIZE TO PREVENT SCOUR.

BMP PICTURE

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AA-9
SEDIMENTATION BASIN

SUBJECT

Access, Maintenance and Construction
Best Management Practices

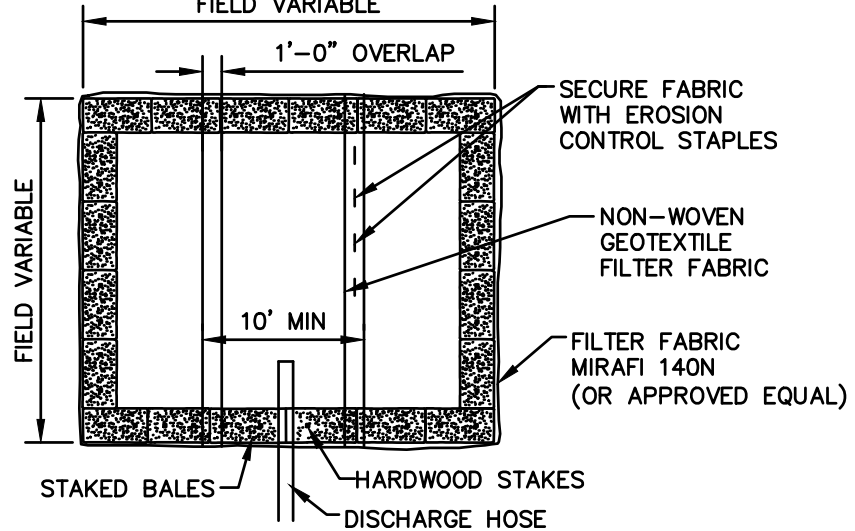
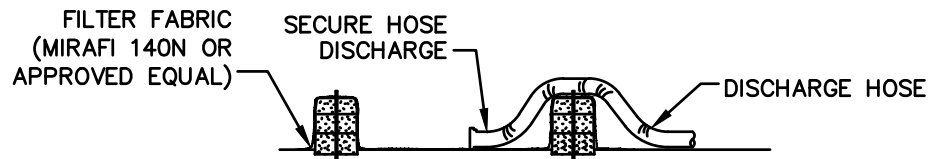
Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

FIELD VARIABLE

**PLAN VIEW****CROSS-SECTION****NOTES:**

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS,
2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
3. KEEP AS FAR FROM WETLANDS AS PRACTICAL.
4. CLEAN AND REMOVE AS SOON AS DEWATERING IS COMPLETE.

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AA-10
DEWATERING BASIN
(SMALL SCALE)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURENOTE:

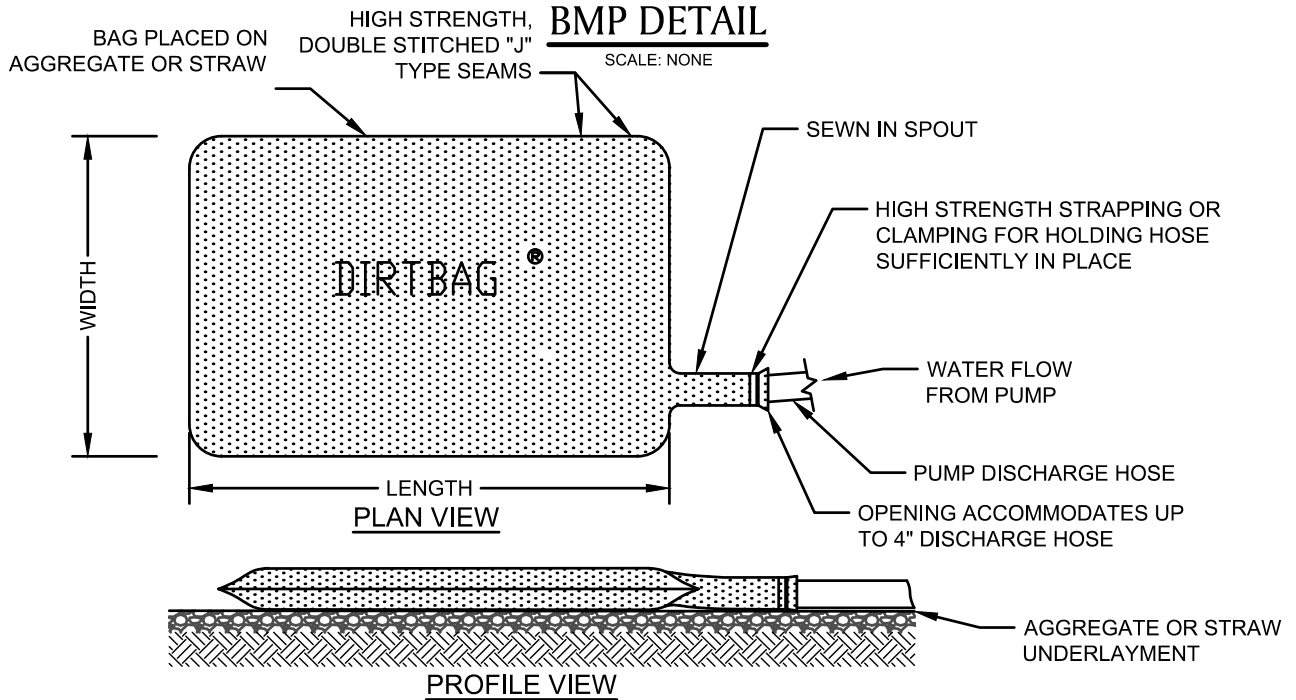
1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

**NOTE:**

ONCE PUMPING COMMENCES, THE DIRT BAG SHALL BE MONITORED FREQUENTLY TO ASSURE THAT THE CONNECTIONS ARE SECURELY FASTENED AND THE RATE OF WATER DELIVERY TO THE STRUCTURE IS LOW ENOUGH TO PREVENT UNFILTERED WATER FROM FLOWING FROM THE HOSE CONNECTIONS OR BAG.

BMP PICTURE

* PICTURE AND DETAIL PROVIDED BY ACF ENVIRONMENTAL

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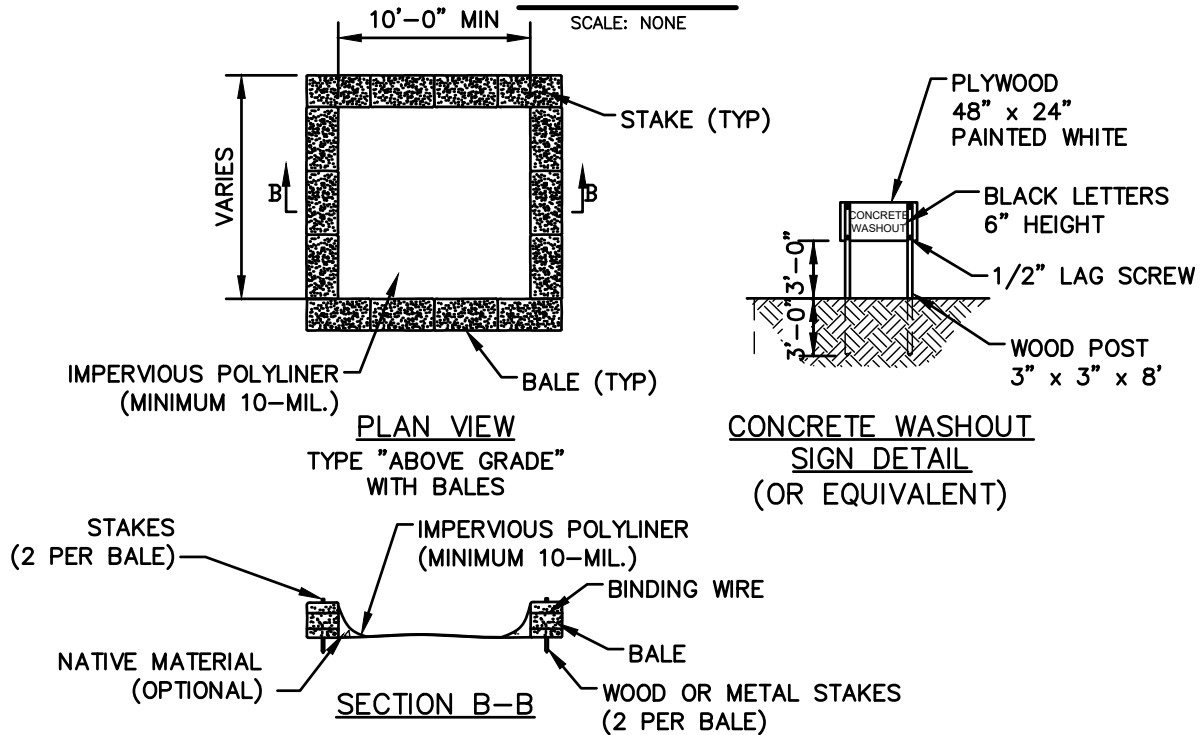
AA-12
DIRTBAG *

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**NOTES:**

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS. COORDINATE SIZE AND LOCATION OF CONCRETE WASTE SUMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. KEEP AS FAR FROM DRAINAGE CHANNELS AND WETLAND AREAS AS PRACTICAL.
3. SUMPS TO BE CLEANED AND WASTE CONCRETE REMOVED AND PROPERLY DISPOSED OF UPON COMPLETION OF WORK.
4. SEE ADDITIONAL NOTES ON DETAIL AA-14.

BMP PICTURE

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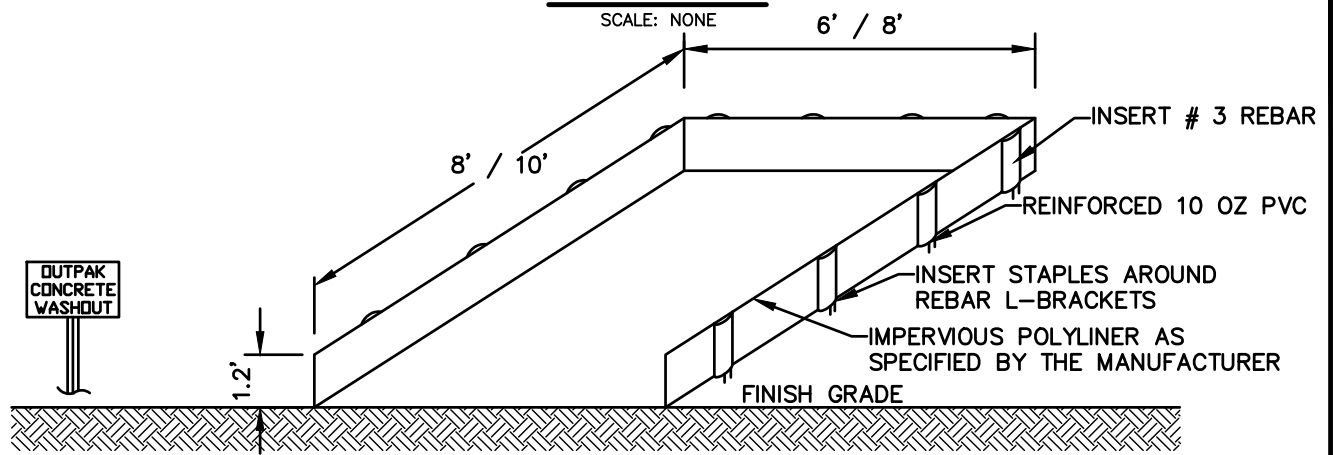
AA-13
CONCRETE WASTE SUMP

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL**NOTES:****CROSS SECTION**

1. PRODUCT TO BE OUTPAK PVC CONCRETE WASHOUT OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT.
3. SIGNS SHALL BE PLACED AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT.
4. THE CONCRETE WASHOUT AREA WILL BE REPLACED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE AND OTHER LIQUID WASTE.
5. WASHOUT RESIDUE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
6. DO NOT MIX EXCESS AMOUNTS OF FRESH CONCRETE OR CEMENT ON-SITE.
7. DO NOT WASH OUT CONCRETE TRUCKS INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.
8. AVOID DUMPING EXCESS CONCRETE IN NON-DESIGNATED DUMPING AREAS.
9. LOCATE WASHOUT AREA AT LEAST 50' FROM STORM DRAIN, OPEN DITCHES, OR WATERBODIES. COORDINATE LOCATION WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.
10. WASH OUT WASTES INTO THE OUTPAK WASHOUT WHERE THE CONCRETE CAN SET, BE BROKEN UP, AND THEN DISPOSED OF PROPERLY.
11. A SECURE, NON-COLLAPSING, NON-WATER COLLECTING COVER MUST BE PLACED OVER CONCRETE WASHOUT PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW OF PRECIPITATION.

BMP PICTURE

* PICTURE AND DETAIL PROVIDED BY OUTPAK WASHOUT
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AA-14
OUTPAK CONCRETE WASHOUT *

SUBJECT

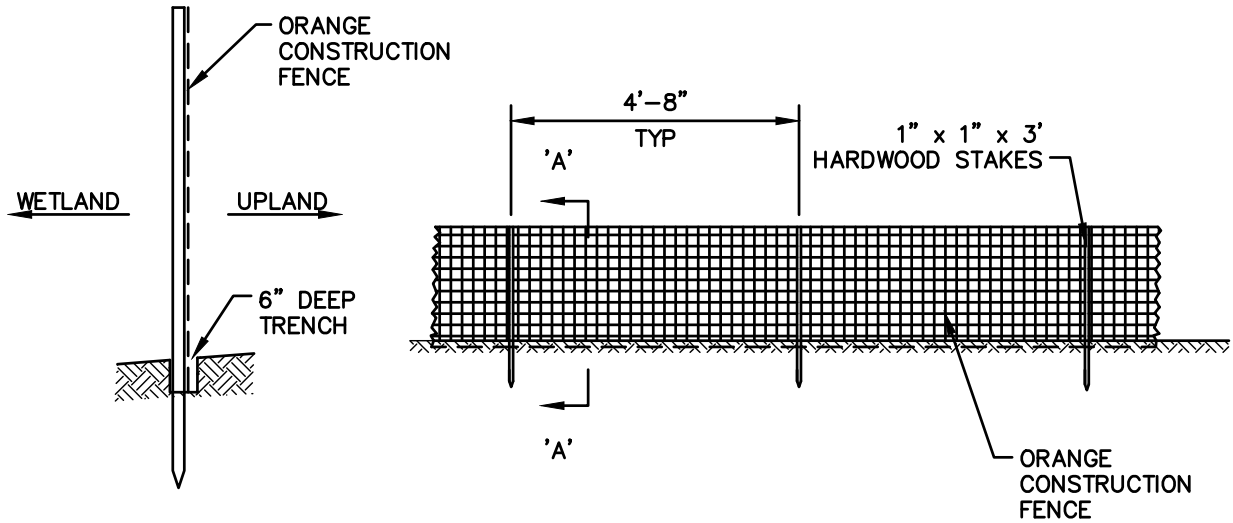
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE



SECTION A-A

BMP PICTURE



AA-15

**BARRIER FENCE
(CONSTRUCTION FENCE)**

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SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

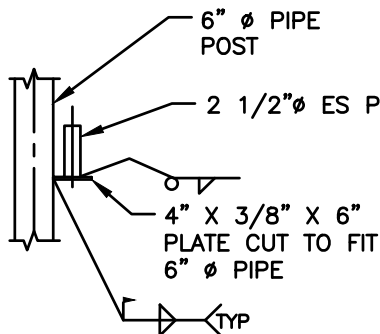
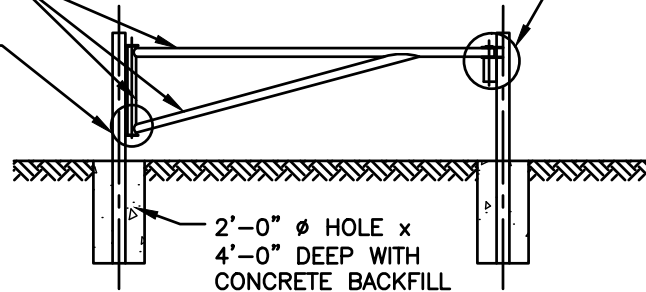
4" ϕ DES PIPE
GATE WELDMENT

BMP DETAIL

SCALE: NONE

DETAIL 2

DETAIL 1

DETAIL 1

SIMILAR DETAIL AT TOP

ROUND PIECE CUT FROM
1/4" PLATE AND WELDED

4" ϕ DES PIPE
1 1/4" ϕ ROD
(SLOTTED)

6" ϕ STD PIPE
WELDED TO 3/8"
PLATE

7" X 3/8" X 10" PLATE
WITH HOLE CUT TO FIT
6" ϕ PIPE & WELDED

6" ϕ PIPE
POST

DOUBLE LOCK
INSERT PLATE

DETAIL 2NOTES:

1. ALL GATE STEEL PIPES SHALL BE IN ACCORDANCE WITH ASTM A-501, PLATES SHALL BE ASTM A-36.
2. ALL STEEL PIPES SHALL BE PRIMED WITH ZINC-CHROMATE PRIMER AND FINISHED WITH AN APPROVED OSHA "SAFETY YELLOW" TOP COAT COMPATIBLE WITH THE PRIMER AND FOR EXTERIOR EXPOSURE.
3. REFLECTORS SHALL BE SPACED AT 3 FEET ALONG THE LENGTH OF THE CROSSBAR AND BRACE
4. BACKFILL AT POSTS TO BE COMPACTED.

BMP PICTURE

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AA-16
ROW GATE / FENCE

SUBJECT

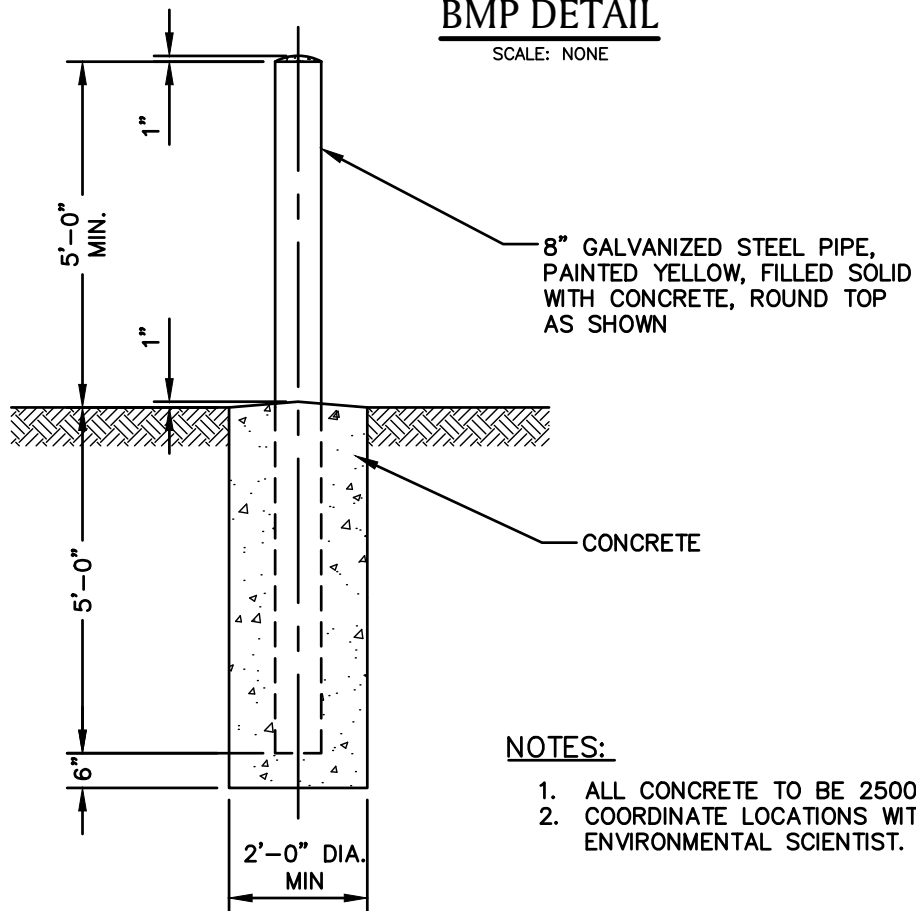
Access, Maintenance and Construction
Best Management Practices

Reference

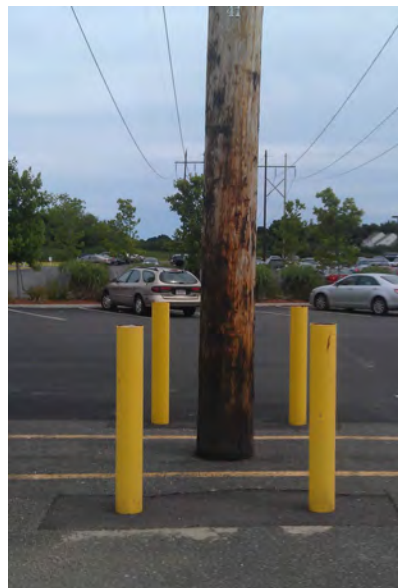
EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. ALL CONCRETE TO BE 2500 P.S.I. MINIMUM.
2. COORDINATE LOCATIONS WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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AA-17
BOLLARD

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP

**Definition**

The control of dust resulting from land-disturbing activities.

Purpose

To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the local permitting authority.

Construction Specifications

A. Non-driving Areas – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

* BMP INFORMATION FROM "NEW YORK STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (AUGUST, 2005)." INFORMATION OBTAINED VIA WEBSITE: <http://www.dec.ny.gov/chemical/29086.html>
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Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. Driving Areas – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

SUBJECT

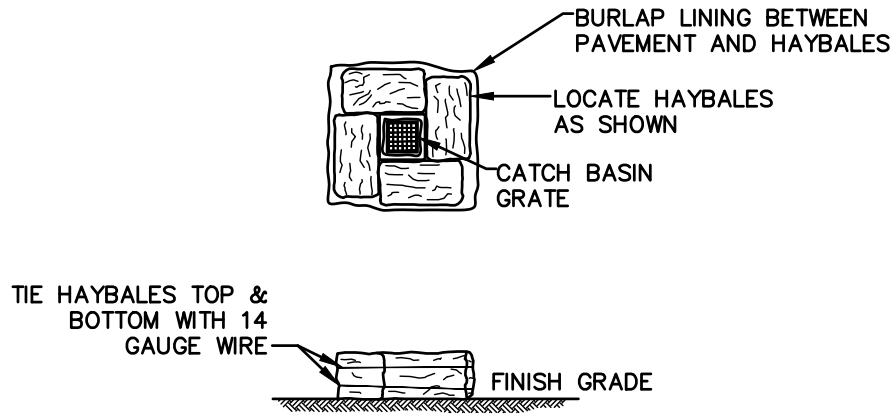
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. SURROUND STREET DRAINAGE STRUCTURE INLET WITH HAY BALES PRIOR TO CONSTRUCTION AND MAINTAIN UNTIL CONSTRUCTION IS COMPLETED. ACCUMULATED SEDIMENTS SHALL BE REMOVED.
2. HAYBALES PLACED ON PAVEMENT SHALL HAVE BURLAP PLACED BETWEEN PAVEMENT AND HAYBALE

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AA-19

CATCH BASIN INLET PROTECTION

SUBJECT

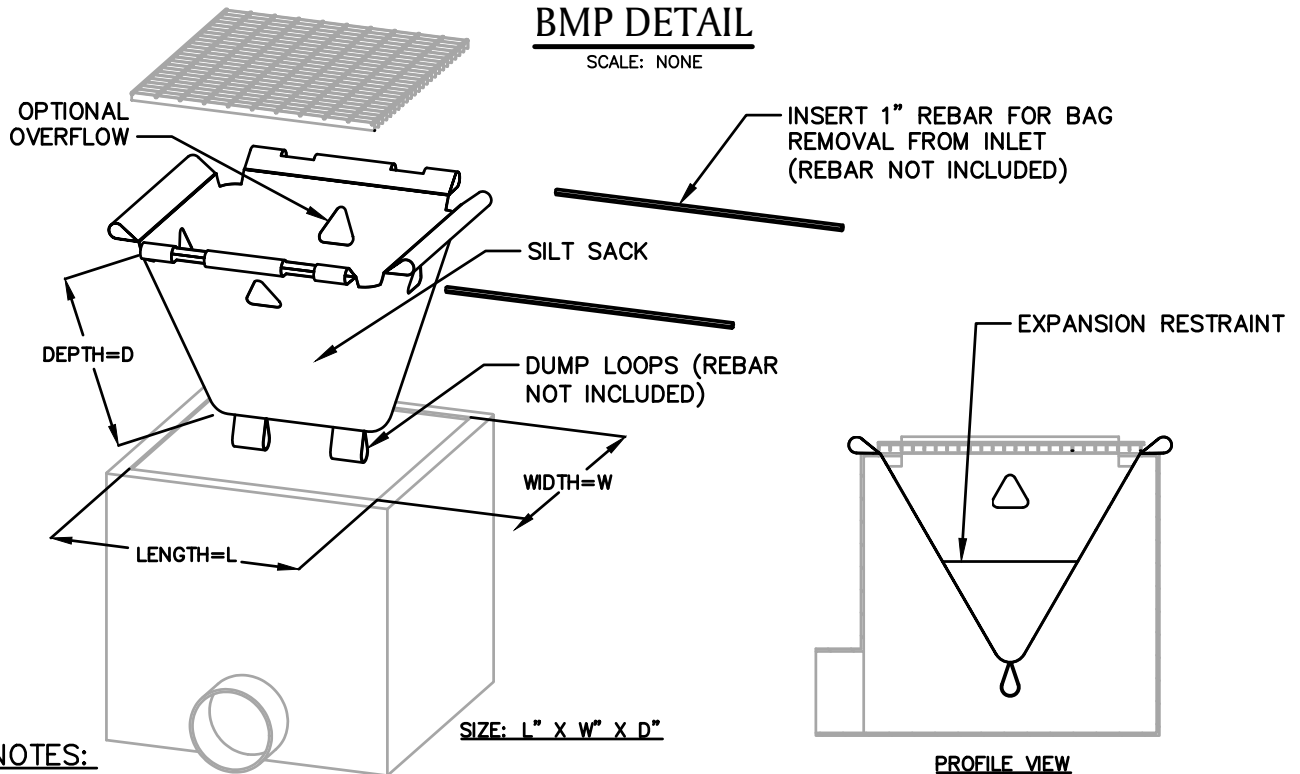
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**BMP PICTURE**

* DETAIL PROVIDED BY ACF ENVIRONMENTAL

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AA-20
SILT SACK *

SUBJECT

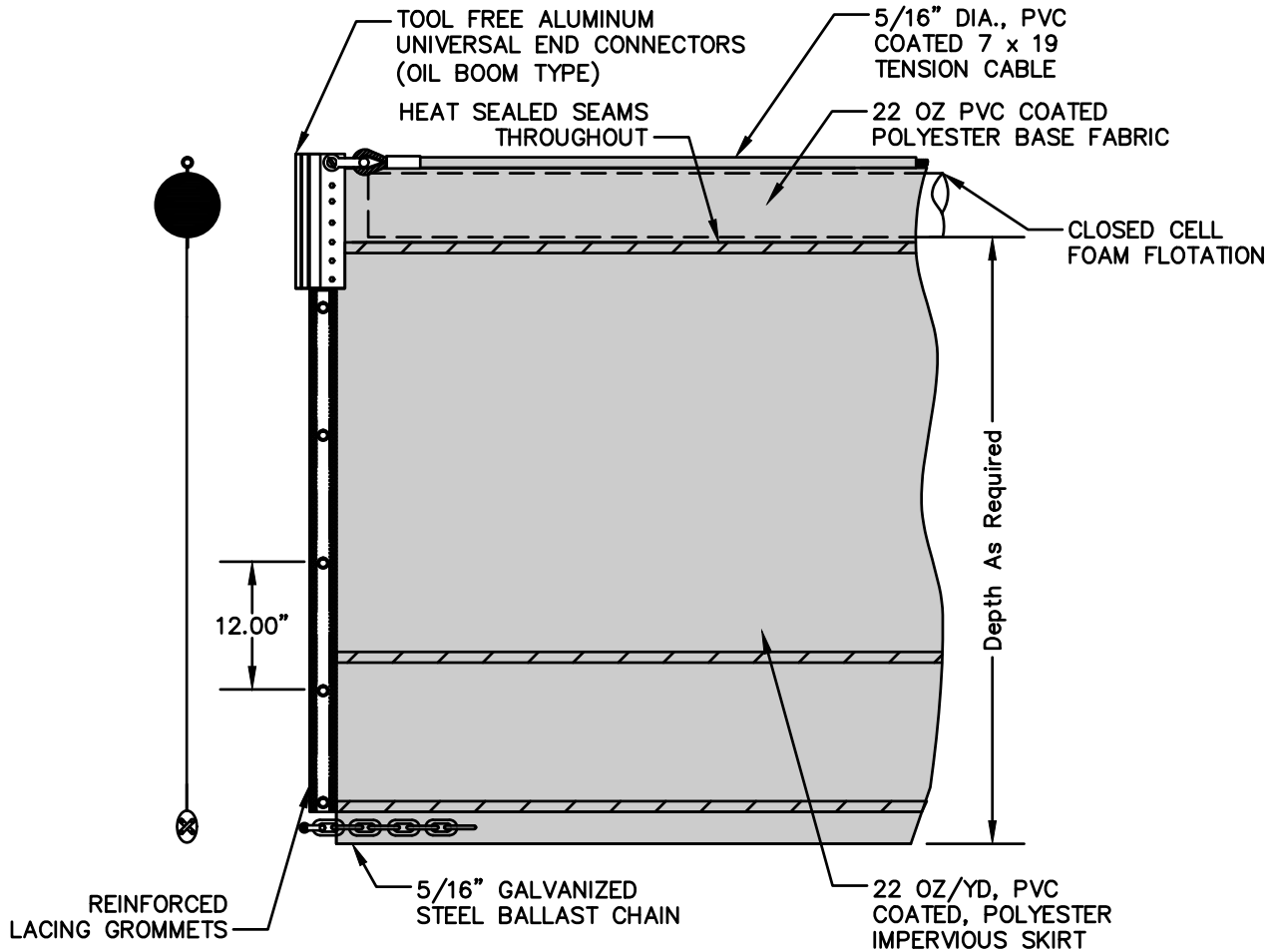
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**BMP PICTURE**

* DETAIL PROVIDED BY BROCKTON EQUIPMENT / SPILLDAM INC.

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AA-21
TURBIDITY CURTAIN *

SUBJECT

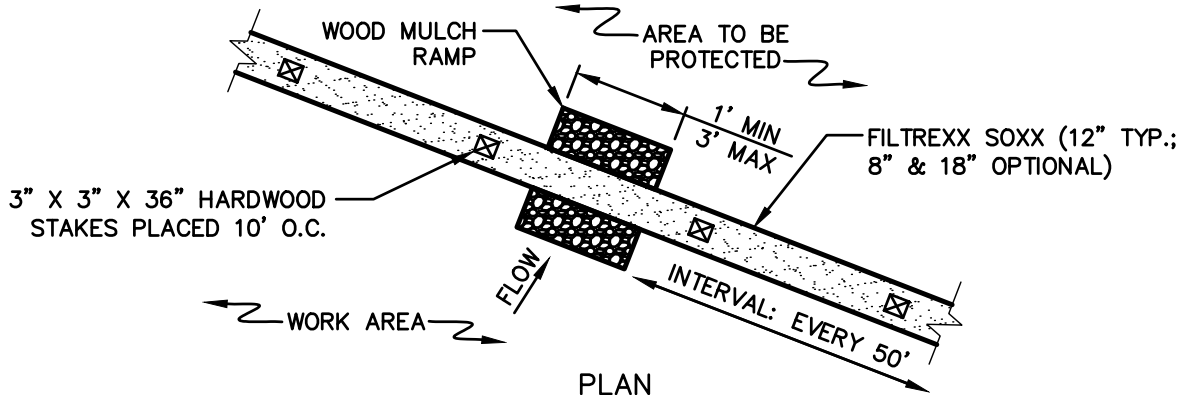
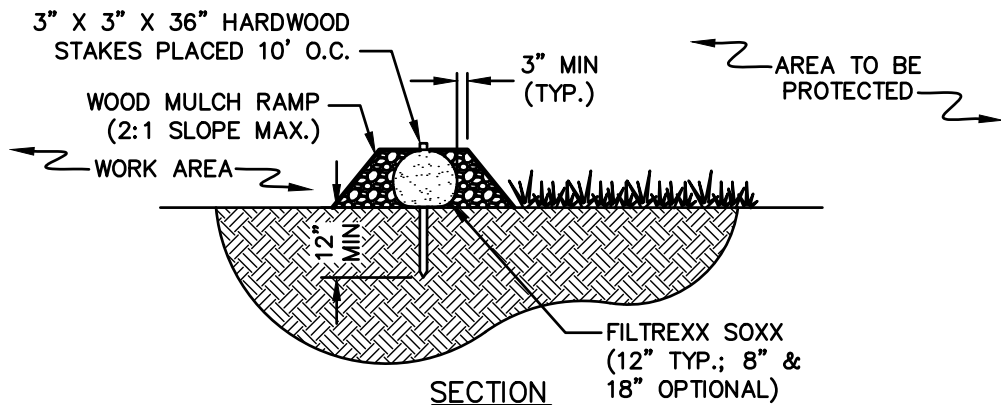
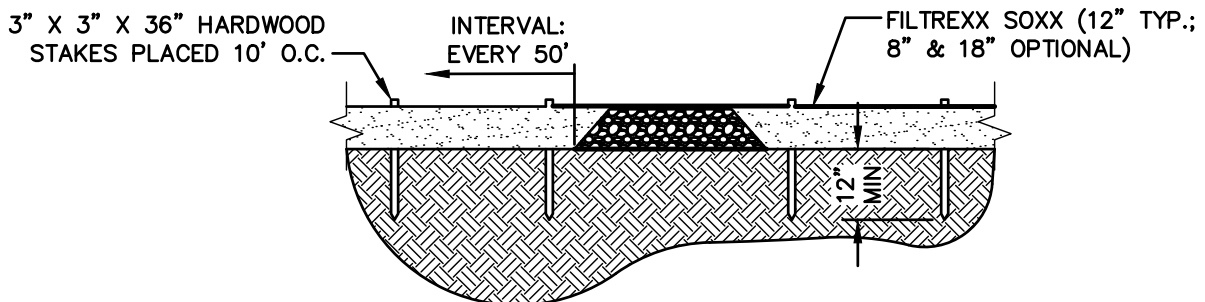
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

PLANSECTIONPROFILENOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" - 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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BMP # AA-22
SILT SOXX AMPHIBIAN & REPTILE
CROSSING #1 (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

SALAMANDER AND SNAKE CROSSING #1

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS, OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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BMP # AA-22
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #1 (2 OF 2)

SUBJECT

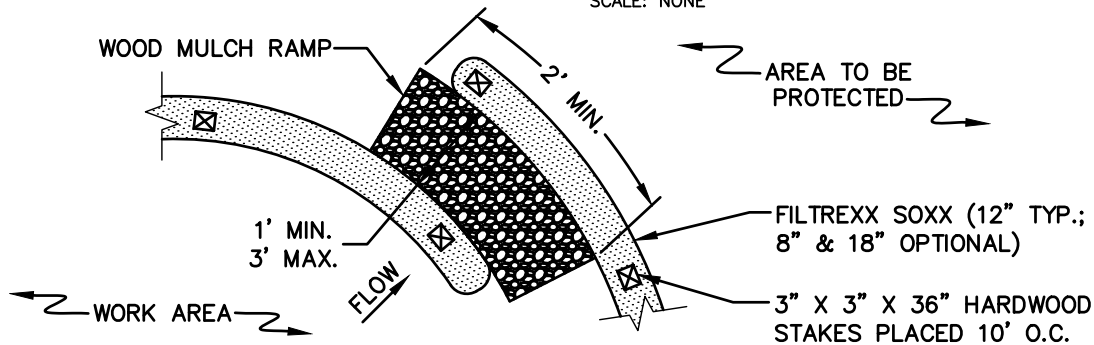
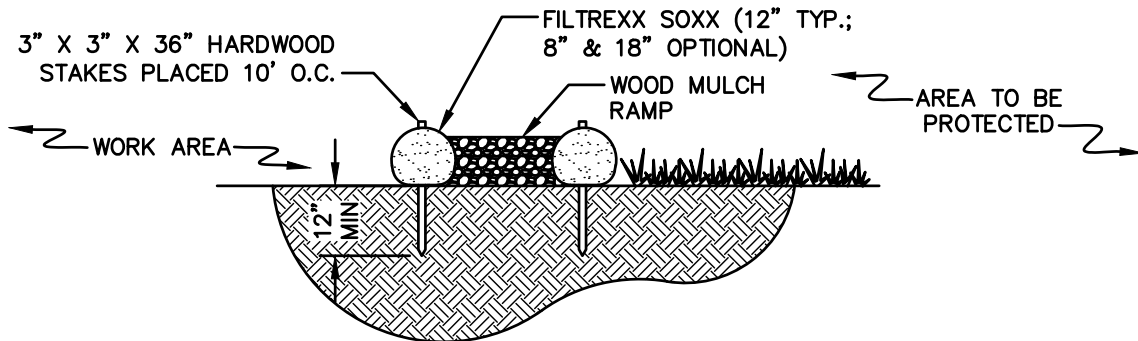
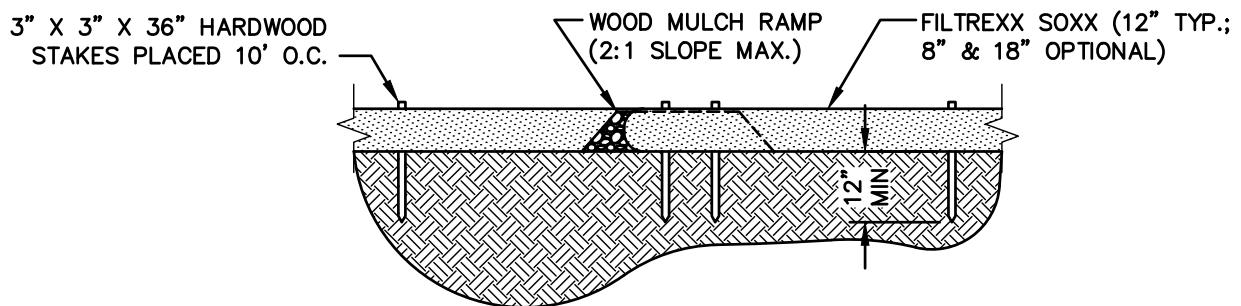
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

PLANSECTIONPROFILENOTES

1. PRODUCT TO BE FILTREXX SILT SOXX OR APPROVED EQUAL BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
2. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
3. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
4. NON-MONOFILAMENT CONTAINMENT MATERIAL SHOULD BE KNITTED PHOTODEGRADABLE OR BIODEGRADABLE MATERIAL, WITH OPENING SIZES BETWEEN 1/8" - 1/4".
5. COMPOST MEDIA SHOULD HAVE PARTICLE SIZE WHERE 99% < 2", 50% > 1/2".
6. COMPOST MATERIAL TO BE DISPOSED OF ON-SITE, OR IN ACCORDANCE WITH ENVIRONMENTAL PERMITS AS APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
7. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
8. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

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BMP # AA-23
SILTSOXX AMPHIBIAN & REPTILE
CROSSING #2 (1 OF 2)

SUBJECT

Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURE

SILTSOXX AMPHIBIAN & REPTILE CROSSING #2

ALTERNATE WOOD MULCH RAMP SILTSOXX NOTES:

1. SILTSOXX, BY FILTREX INTERNATIONAL, OR APPROVED EQUAL PRODUCT SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES.
2. BMP SHOULD ONLY BE UTILIZED IN AREAS WHERE RARE SALAMANDER AND SNAKE HABITAT OCCURS OR AT THE DIRECTION OF THE NATIONAL GRID ENVIRONMENTAL SCIENTIST.

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BMP # AA-23

SILTSOXX AMPHIBIAN & REPTILE
CROSSING #2 (2 OF 2)

SUBJECT

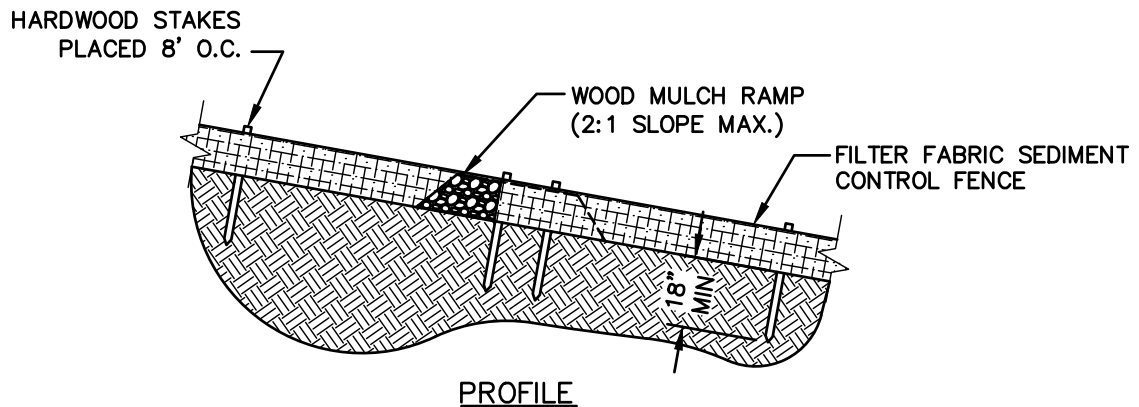
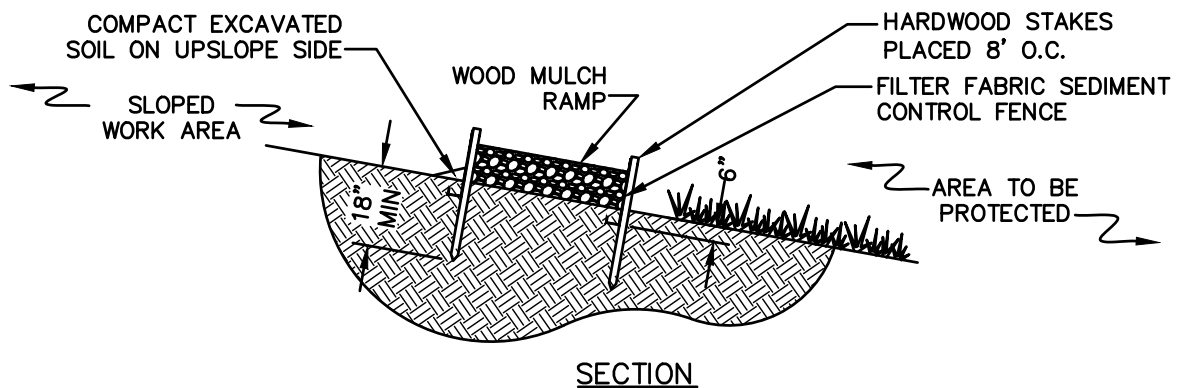
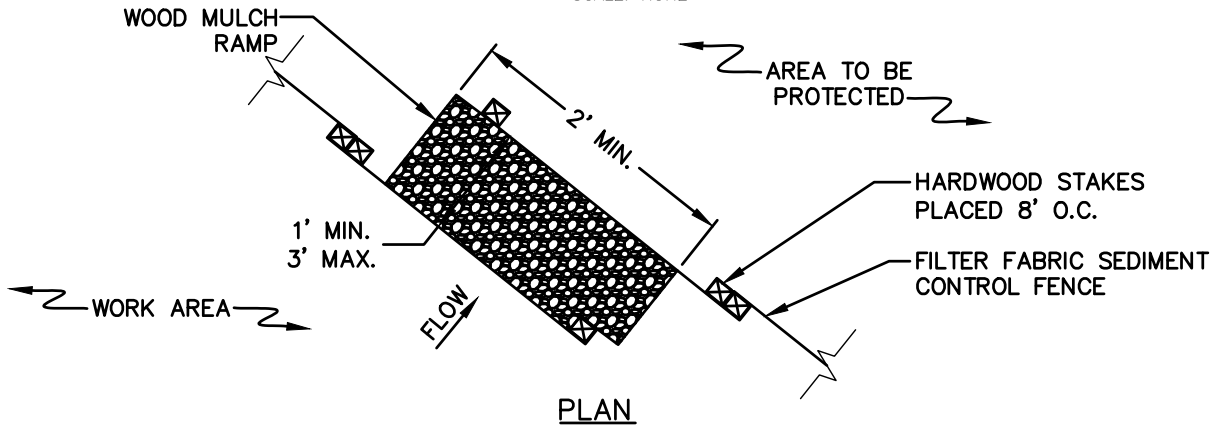
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES**

1. IN AREAS WHERE SLOPES OR RUN-OFF VOLUME PROHIBIT USE OF SILTSOXX, CROSSINGS CAN BE PROVIDED THROUGH TRENCHED SILT FENCE.
2. INTALL SILT FENCE TO SPECIFICATIONS IN EG303 APPENDIX 7 "SEC-2 SEDIMENT CONTROL FENCE."
3. WOOD MULCH RAMP IS OPTIONAL DEPENDING ON SUBSTRATE/SITE CONDITIONS, AND TO BE APPROVED BY NATIONAL GRID ENVIRONMENTAL SCIENTIST.
4. GAPS TO BE SPACED EVERY 50 FT, IF POSSIBLE GIVEN WETLAND PERMIT CONDITIONS.

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BMP # AA-24
SILT FENCE AMPHIBIAN & REPTILE
CROSSING #3

SUBJECT

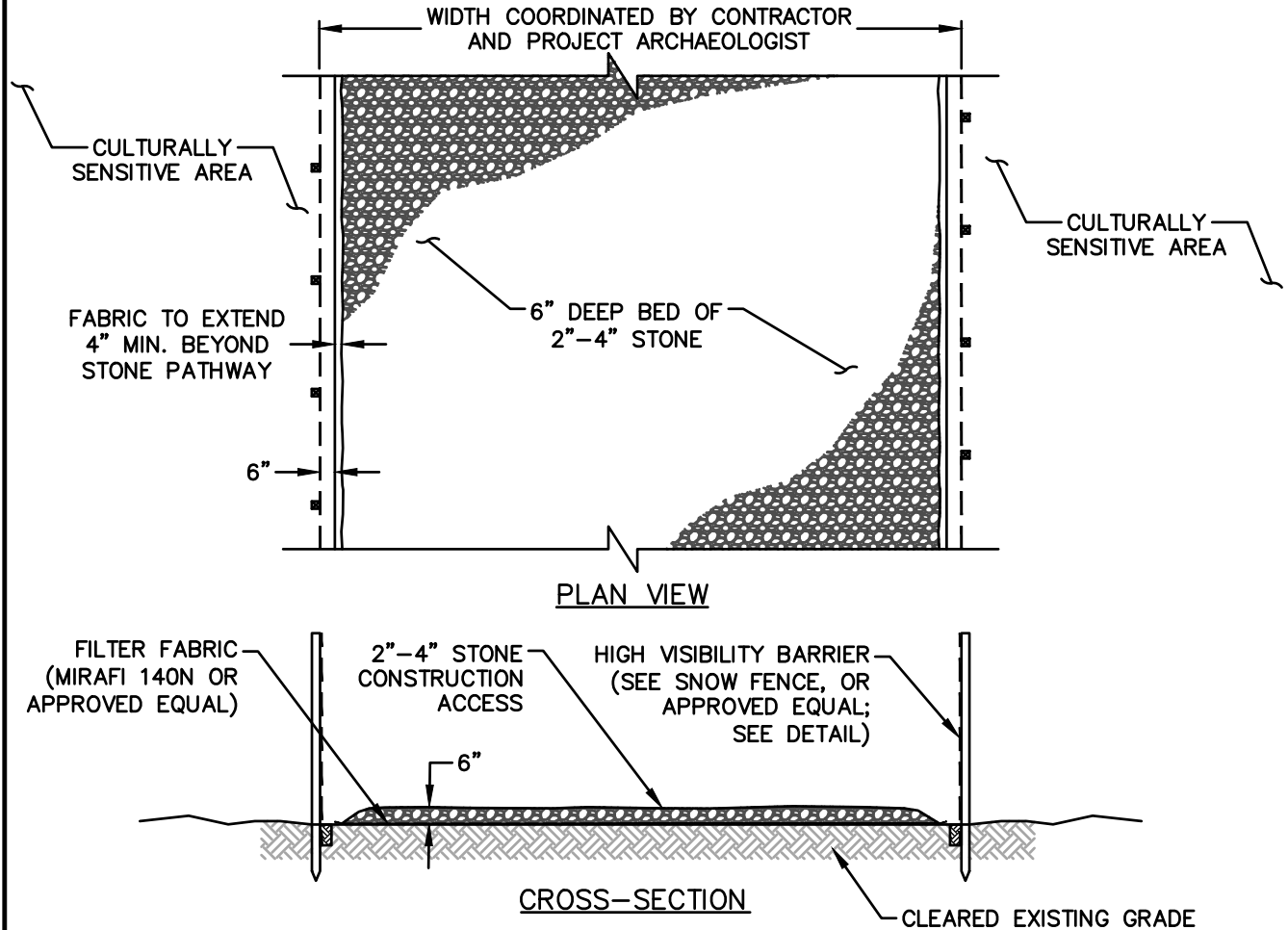
Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP DETAIL

SCALE: NONE

**NOTES:**

1. ARCHAEOLOGICAL SITE BOUNDARIES, AS DEFINED BY INTENSIVE ARCHAEOLOGICAL SURVEY AND SITE AVOIDANCE AND PROTECTION PLANS, WILL BE DEMARCATED BY STAKING BY THE PROJECT ARCHAEOLOGIST.
2. GEOTEXTILE AND STONE MAY REMAIN IN PLACE FOLLOWING CONSTRUCTION IF PERMANENT PROTECTION IS NECESSARY AND DEPENDENT ON EASEMENT RIGHTS.
3. WHERE APPROVED BY THE PROJECT-SPECIFIC SAPP, CONSTRUCTION MATTING MAY BE ADDED OVER, OR IN PLACE OF, THE FABRIC AND STONE.
4. INSTALLATION AND REMOVAL OF FABRIC AND STONE, EROSION CONTROLS, AND/OR CONSTRUCTION MATTING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST AT EACH LOCATION(S).
5. INSTALLATION OF THESE MEASURES WILL BE CONDUCTED WITH LOW-GROUND PRESSURE VEHICLES WHERE FEASIBLE.
6. WHERE REQUIRED BY THE PROJECT-SPECIFIC SAPP, TEMPORARY, HIGH VISIBILITY PROTECTIVE FENCING (E.G., SNOW FENCE OR PLASTIC FENCE) WILL BE ERECTED ALONG THE SITE BOUNDARIES OUTSIDE OF THE WORKSPACE WITHIN THE ROW IN ORDER TO PREVENT VEHICLES FROM TRAVELING THROUGH THOSE SITE AREAS DURING CONSTRUCTION. THE PROTECTIVE FENCE WILL BE POSTED WITH "NO TRESPASSING" SIGNS, SO THAT THE SITES CAN BE AVOIDED BY ALL CONSTRUCTION RELATED ACTIVITIES. THE FENCING WILL BE REMOVED UPON COMPLETION OF THE PROJECT. THE INSTALLATION AND REMOVAL OF FENCING WILL BE MONITORED BY THE PROJECT ARCHAEOLOGIST.

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BMP # AA-25**CULTURAL AVOIDANCE (1 OF 2)**

SUBJECT


Access, Maintenance and Construction
Best Management Practices

Reference

EP No. 3 - Natural Resource
Protection (Chapter 6)

BMP PICTURES



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APPENDIX 5
CERTIFICATION FORM FOR INVASIVE SPECIES CONTROL

Certain permit conditions, therefore a Condition of Contracts for the Prime Contractor, any Subcontractors, and any equipment or mat vendors for **National Grid Projects** shall be required to Certify their equipment⁷ {each piece of equipment used on site} as 'clean'⁸.


_____ (*name of firm*) hereby Certifies that
 _____ (*make, model, and/or type*)
 _____ (*equipment ID tag or #*) meets the following

1. before entry on to the job site, has been sufficiently cleaned to remove all accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species; and
2. that the above piece of equipment has neither been off-loaded nor operated in the interval between cleaning and delivery to the jobsite.
3. that equipment deployed in areas of invasive species (as identified in project plans) shall be cleaned prior to redeployment.

_____ (*signed*) _____ (*dated*)
 _____ (*printed name*) _____ (*title*)
 _____ (*Firm*)

The signed original of this form {one for each piece of equipment (or lot⁹ of mats)} is to be given to the NG Construction Supervisor assigned to the project.

⁷ Equipment may include, but is not limited to bulldozers, excavators, backhoes, bucket trucks (tracked or wheeled), pulling equipment, concrete trucks, compressors, drilling equipment, and mats (composite, wood, or other materials).
⁸ With regard to invasive species, the definition of clean means free of accumulated mud, debris, plant fragments, and detritus that could harbor seeds, roots, or plant fragments of so-called invasive plant species.
⁹ Lot of mats is the number of mats that may be transported by one forwarder/truck at a time.

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APPENDIX 6

SNOW DISPOSAL GUIDELINES

Finding a place to dispose of collected snow poses a challenge. While we are all aware of the threats to public safety caused by snow, collected snow that is contaminated with road salt, sand, litter, and automotive pollutants such as oil also threatens public health and the environment.

As snow melts, road salt, sand, litter, and other pollutants are transported into surface water or through the soil where they may eventually reach the groundwater. Road salt and other pollutants can contaminate water supplies and are toxic to aquatic life at certain levels. Sand washed into water bodies can create sand bars or fill in wetlands and ponds, impacting aquatic life, causing flooding, and affecting our use of these resources.

There are several steps that should be taken to minimize the impacts of snow disposal on public health and the environment.


- **DO NOT** dump snow into any water body, including rivers, the ocean, reservoirs, ponds, or wetlands. In fact, a buffer of at least 50 feet between any snow disposal area and any the high-water mark of any surface water should be kept. A silt fence or equivalent barrier should be securely placed between the snow storage area and the high-water mark. In addition to water quality impacts and flooding, snow disposed in surface waters can cause navigational hazards when it freezes into ice blocks.
- **DO NOT** dump snow within a wellhead protection area (e.g., a Zone II), in a high or medium-yield aquifer, or within 75 feet of a private well, where road salt may contaminate water supplies. **Ask an Environmental Department representative for guidance in determining if a proposed disposal area is located within one of these sensitive areas.**
- Avoid disposing of snow on top of storm drain catch basins or in storm water drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.
- All debris in a snow storage area should be cleared from the site and properly disposed of no later than May 15 of each year the area is used for snow storage.

Under extraordinary conditions, when all land-based snow disposal options are exhausted, disposal of snow that is not obviously contaminated with road salt, sand, and other pollutants may be allowed near (within 50 feet) or even in certain water bodies under certain conditions.

In these dire situations, **notify the Environmental Department** so that the local Conservation Commission and the appropriate MassDEP Regional Service Center (in MA), RI DEM Office of Water Resources – RIPDES

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Program (in RI), NH Department of Environmental Services – NHDES (in NH) and VT Department of Environmental Conservation - VT DEC (in VT) can be contacted before disposing of snow in a water body.

In emergency situations and after consulting an Environmental Department representative the following guidance should be followed:

- Dispose of snow in open water with adequate flow and mixing to prevent ice dams from forming.
- Do not dispose of snow in saltmarshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, wellhead protection areas, or other environmentally sensitive areas.
- Do not dispose of snow where trucks may cause shoreline or stream bank damage or erosion.

Attachment D

SEIR CIRCULATION LIST

Agency	Email Address	Address
Massachusetts Environmental Policy Act (MEPA) Office	MEPA@mass.gov	MEPA Office 100 Cambridge Street, Suite 900 Boston, MA 02144
Department of Environmental Protection, Boston Office	helena.boccadoro@mass.gov	Commissioner's Office One Winter Street Boston, MA 02108
Department of Environmental Protection Northeast Regional Office	John.d.viola@mass.gov	DEP/ Northeast Regional Office Attn: MEPA Coordinator 205B Lowell Street Wilmington, MA 01887
Massachusetts Department of Transportation – District Office	MassDOTPPDU@dot.state.ma.us timothy.paris@dot.state.ma.us	District #4 Attn: MEPA Coordinator 519 Appleton Street Arlington, MA 02476
Massachusetts Historical Commission	Mail a hard copy of the filing to MHC	The MA Archives Building 220 Morrissey Boulevard Boston, MA 02125
Merrimack Valley Regional Planning Commission	info@mvpc.org nlavallee@mvpc.org cgerstenbacher@mvpc.org	
Northern Middlesex Council of Governments	jraitt@nmcog.org ishahbazian@nmcog.org One hard copy Attn: Jennifer Raitt	Northern Middlesex Council of Governments 40 Church Street Lowell, MA 01852-2686
Metropolitan Area Planning Council	mpillsbury@mapc.org afelix@mapc.org	
Town of Andover	SelectBoard@andoverma.us conservation@andoverma.gov CDPHealth@andoverma.us CDPPlanningEconomic@andoverma.us	Town of Andover 36 Bartlet Street Andover, MA 01810
Town of Reading	selectboard@ci.reading.ma.us ctirone@ci.reading.ma.us amacnichol@ci.reading.ma.us asolarin@ci.reading.ma.us	Town of Reading 16 Lowell Street Reading, MA 01867
Town of Lynnfield	ecademartori@town.lynnfield.ma.us chope@town.lynnfield.ma.us rcurtin@town.lynnfield.ma.us	Town of Lynnfield 55 Summer St. Lynnfield, MA 01940
Town of North Reading	lbasbanes@northreadingma.gov bbracey@northreadingma.gov mgilleberto@northreadingma.gov dmcknight@northreadingma.gov	Town of North Reading 235 North Street North Reading, MA 01864-1298
Town of Saugus	spuracchio@saugus-ma.gov ldedomenico@saugus-ma.gov	Town of Saugus 298 Central Street

	creilly@saugus-ma.gov jJarosz@saugus-ma.gov	Saugus, MA 01906 Town of Saugus Town Hall Annex 25 Main Street Saugus, MA 01906
Town of Tewksbury	JFontaine@tewksbury-ma.gov ALowder@tewksbury-ma.gov PMirabella@tewksbury-ma.gov SGillis@tewksbury-ma.gov	Town of Tewksbury 1009 Main Street Tewksbury, MA 01876
Town of Wakefield	boardofhealth@wakefield.ma.us ConservationDepartment@wakefield.ma.us PlanningBoard@wakefield.ma.us smaio@wakefield.ma.us	Town of Wakefield 1 Lafayette St. Wakefield, MA 01880
Town of Wilmington	vgingrich@wilmingtonma.gov kmalatesta@wilmingtonma.gov jhull@wilmingtonma.gov	Town of Wilmington Wilmington Town Hall 121 Glen Road, Room 11 Wilmington, MA 01887
EEA Environmental Justice Director	MEPA-EJ@mass.gov	MEPA Office Attn: EEA EJ Director 100 Cambridge Street, Suite 900 Boston, MA 02144
Coastal Zone Management	robert.boeri@mass.gov patrice.bordonaro@mass.gov	Coastal Zone Management Attn: Project Review Coordinator 251 Causeway Street, Suite 800 Boston, MA 02114
DMF – North Shore	DMF.EnvReview-North@mass.gov	DMF – North Shore Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930
Department of Agricultural Resources	barbara.hopson@mass.gov	Department of Agricultural Resources Attn: MEPA Coordinator 138 Memorial Avenue, Suite 42 West Springfield, MA 01089
Natural Heritage and Endangered Species Program	melany.cheeseman@mass.gov emily.holt@mass.gov	Natural Heritage and Endangered Species Program Division of Fisheries & Wildlife 1 Rabbit Hill Road

		Westborough, MA 01581
DCR	andy.backman@mass.gov	DCR Attn: MEPA Coordinator 251 Causeway St. Suite 600 Boston MA 02114
Department of Energy Resources	paul.ormond@mass.gov	Department of Energy Resources Attn: MEPA Coordinator 100 Cambridge Street, 10th floor Boston, MA 02114
Massachusetts Water Resources Authority	Katherine.ronan@mwra.com	Massachusetts Water Resource Authority Attn: MEPA Coordinator 100 First Avenue Charlestown Navy Yard Boston, MA 02129
Massachusetts Bay Transit Authority	MEPAcoordinator@mbta.com	Massachusetts Bay Transit Authority Attn: MEPA Coordinator 10 Park Plaza, 6th Fl. Boston, MA 02116-3966